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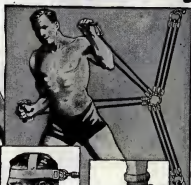
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- 20—5 Ways to Put New Power Into Your Legs and Thighs—many otherwise strong men are weak here.
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VOLUME XIV
NUMBER 1

ASTOUNDING STORIES

SEPTEMBER
1934

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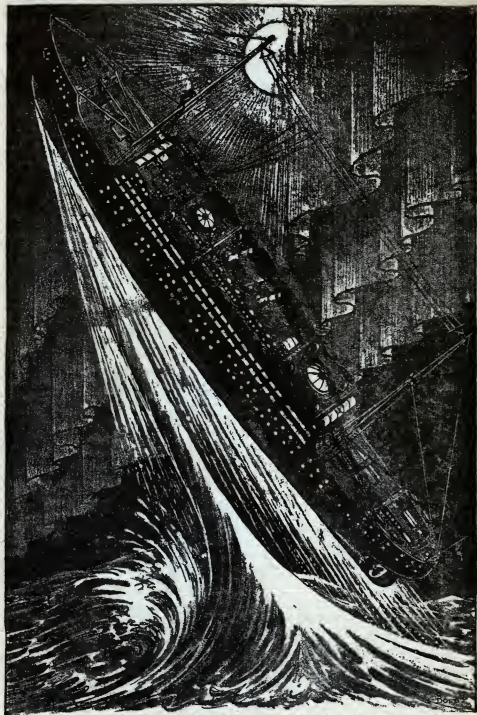
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28x4-40-380	9.45	8.15	8.35	8.55	32x8-380	9.55	8.15	8.35	8.55
28x4-40-385	9.55	8.25	8.45	8.65	32x8-385	9.65	8.25	8.45	8.65
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28x4-40-410	10.05	8.75	8.95	9.15	32x8-410	10.15	8.75	8.95	9.15
28x4-40-415	10.15	8.85	9.05	9.25	32x8-415	10.25	8.85	9.05	9.25
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28x4-40-425	10.35	9.05	9.25	9.45	32x8-425	10.45	9.05	9.25	9.45
28x4-40-430	10.45	9.15	9.35	9.55	32x8-430	10.55	9.15	9.35	9.55
28x4-40-435	10.55	9.25	9.45	9.65	32x8-435	10.65	9.25	9.45	9.65
28x4-40-440	10.65	9.35	9.55	9.75	32x8-440	10.75	9.35	9.55	9.75
28x4-40-445	10.75	9.45	9.65	9.85	32x8-445	10.85	9.45	9.65	9.85
28x4-40-450	10.85	9.55	9.75	9.95	32x8-450	10.95	9.55	9.75	9.95
28x4-40-455	10.95	9.65	9.85	10.05	32x8-455	11.05	9.65	9.85	10.05
28x4-40-460	11.05	9.75	9.95	10.15	32x8-460	11.15	9.75	9.95	10.15
28x4-40-465	11.15	9.85	10.05	10.25	32x8-465	11.25	9.85	10.05	10.25
28x4-40-470	11.25	9.95	10.15	10.35	32x8-470	11.35	9.95	10.15	10.35
28x4-40-475	11.35	10.05	10.25	10.45	32x8-475	11.45	10.05	10.25	10.45
28x4-40-480	11.45	10.15	10.35	10.55	32x8-480	11.55	10.15	10.35	10.55
28x4-40-485	11.55	10.25	10.45	10.65	32x8-485	11.65	10.25	10.45	10.65
28x4-40-490	11.65	10.35	10.55	10.75	32x8-490	11.75	10.35	10.55	10.75
28x4-40-495	11.75	10.45	10.65	10.85	32x8-495	11.85	10.45	10.65	10.85
28x4-40-500	11.85	10.55	10.75	10.95	32x8-500	11.95	10.55	10.75	10.95
28x4-40-505	11.95	10.65	10.85	11.05	32x8-505	12.05	10.65	10.85	11.05
28x4-40-510	12.05	10.75	10.95	11.15	32x8-510	12.15	10.75	10.95	11.15
28x4-40-515	12.15	10.85	11.05	11.25	32x8-515	12.25	10.85	11.05	11.25
28x4-40-520	12.25	10.95	11.15	11.35	32x8-520	12.35	10.95	11.15	11.35
28x4-40-525	12.35	11.05	11.25	11.45	32x8-525	12.45	11.05	11.25	11.45
28x4-40-530	12.45	11.15	11.35	11.55	32x8-530	12.55	11.15	11.35	11.55
28x4-40-535	12.55	11.25	11.45	11.65	32x8-535	12.65	11.25	11.45	11.65
28x4-40-540	12.65	11.35	11.55	11.75	32x8-540	12.75	11.35	11.55	11.75
28x4-40-545	12.75	11.45	11.65	11.85	32x8-545	12.85	11.45	11.65	11.85
28x4-40-550	12.85	11.55	11.75	11.95	32x8-550	12.95	11.55	11.75	11.95
28x4-40-555	12.95	11.65	11.85	12.05	32x8-555	13.05	11.65	11.85	12.05
28x4-40-560	13.05	11.75	11.95	12.15	32x8-560	13.15	11.75	11.95	12.15
28x4-40-565	13.15	11.85	12.05	12.25	32x8-565	13.25	11.85	12.05	12.25
28x4-40-570	13.25	11.95	12.15	12.35	32x8-570	13.35	11.95	12.15	12.35
28x4-40-575	13.35	12.05	12.25	12.45	32x8-575	13.45	12.05	12.25	12.45
28x4-40-580	13.45	12.15	12.35	12.55	32x8-580	13.55	12.15	12.35	12.55
28x4-40-585	13.55	12.25	12.45	12.65	32x8-585	13.65	12.25	12.45	12.65



The liner rushed upward and outward—fated to become a new asteroid, swinging around the Sun in a majestic period of five years and thirty-four days.

The Living Equation

Our Thought-variant for September

by Nat Schachner

Illustrated by Elliot Dold

BILL SIKE was a burglar; Hugh Wilmot a mathematician. Which was a misfortune. Ever after, Wilmot was to bemoan the fact that their respective rôles had not been reversed. Nor would Sike have raised the slightest objection. Quite the contrary!

Sike, when he picked on Wilmot's small but comfortably furnished home on the outskirts of the great city as a suitable site for the exercise of his talents, had no inkling of what awaited him. If he had, he aggrievedly informed his interlocutor after the event, he would rather have marched to the nearest police station, confessed to the contemplated crime *in futuro*, and accepted with a cheerful and philosophic mind a three-year stretch in the can.

But then, as his guide, mentor, and counselor, "Louie the Eel," pointed out with much penetrating language, it all boiled down to the fact that he, Bill Sike, was a disgrace to the profession, a blundering idiot, and a stumbling amateur. Catch a skillful craftsman like Louie arousing a household in the course of his nocturnal business, or falling all over a lousy infernal machine in a mad attempt at a get-away!

So the world was thrown into a state of convulsion from which it has not yet extricated itself, without at the same time having any clear idea of the exact mechanism of the debacle. Bill, for particular reasons associated with the laws on the statute books governing

breaking and entering, maintained a discreet silence, except to the aforesaid Louie the Eel, and to Hugh Wilmot, who was able to exercise a certain compulsion.

But Bill, as has been stated, was not a mathematician. He could not remember, under Wilmot's most stringent cross-examination, just what it was he had done, and the almost supernatural phenomena of which he was an unwilling witness and sole human participant had left him reduced to a state of incoherent gibberings. As for explanations, alas——

Wilmot knew the explanations. He had been in the habit, when the hour was late and the wine good, of expatiating to his friend, Arnold Polger, certain fanciful theories which Polger, a lawyer and an intelligent man to boot, received with a certain open-mindedness because mathematics generally was in all conscience mysterious enough.

But it was the method, the accidental concatenation of levers and light impulses and whirling disks which set the machine into strange motion, that excited Wilmot to frenzy. Bill squirmed and growled and groveled, and swore that he had been too busy with panicky flight before, and too terrified after, to know what he had done. The machine, of course, was wrecked, together with everything else.

Wilmot, being a mathematician, calculated the possible permutations and combinations of all the levers and light

cells and disks he had incorporated into the damned thing to be a staggering figure with enough naughts on the end of it to take five thousand men five thousand years to exhaust every possible combination. That is, even if he could reproduce exactly what had taken him seven years of ceaseless toil to construct.

So it was that Wilmot tore his hair and fumed helplessly and swore at an unkind fate that had not destined him to be a burglar from his cradle, so that on that eventful night of September 16th, he could have burglarized his own home and crashed into the machine himself.

This is how it all came about.

ARNOLD POLGER followed his host patiently through the library and living room into the rather large chamber that had been built to accommodate week-end guests. He was in an expansive mood. Sally, the cook, had thoughtfully provided all his favorite dishes, and the cigar in his mouth had an excellent aroma.

He liked visiting his friend, Hugh Wilmot. Law was an exacting profession, clients sometimes bores and judges a curse, so it was a relief to steep himself in the rarefied, but extremely exciting, atmosphere that eternally surrounded the mathematician. It sharpened his brains, honed them to razor edge, even though he could not often quite follow the glittering dance of equations.

Wilmot flung open the door. "This," he announced with a certain pride, "is what I wanted you to look at."

Polger surveyed the machine with considerable interest, but no understanding. It filled half the chamber. An intricate array of gears meshed on gears; innumerable levers connected with turning wheels underneath the supporting stanchions; and thick cables ran to an auxiliary motor. Photo-electric cells cast a strange bluish glare on every

disk and gear of the complex mechanism. And midway between machine and ceiling, motionless, suspended from no discoverable source, was a smooth, round, transparent globe, a hollow, thin-walled bubble.

"Well?" he said at last. "What is it?"

"An equation producer. I've worked on it for seven years, and I think I've got somewhere."

"Oh!" Polger said disappointedly. He had been intimate with Wilmot long enough to understand mathematical phraseology. "Something like the 'brain' machine at Massachusetts Tech. for solving differential equations, or the tide calculator at Washington, eh?"

He was really sorry. After all, his friend was brilliant, and he had received in the course of years many cryptic hints of this ceaseless toil of his. He had expected something more.

Wilmot glared at him reproachfully. "I said equation *producer*," he said, "not equation calculator. I choose my words carefully. Those, clever as they are, are mere glorified adding machines. They solve the differential problems that are fed into them, problems for which any mathematician of modest attainments could get the answers with pencil and paper and a few hours' work.

"This is something different. It starts where the others leave off; it is a mathematician on its own hook."

Polger puffed comfortably on his cigar. "Suppose you explain," he suggested.

Wilmot gazed raptly at his creation. "You notice the hundreds of levers and disks?"

"Yes."

"Every one of them, when set, represents a definite component in an equation."

"Exactly the same as the Mass. Tech. 'brain'," Polger pointed out.

"In a way," Wilmot admitted. "But with a tremendous difference. These

deal with vectors, directional mathematics, and tensors, the mathematics of strain, the most advanced and intricate of all forms of modern analysis. Without these twin flights of man's genius, we should be helpless to explain the exact inner workings of the universe." His eyes held a far-away look.

"Sometimes I think that these symbols, the little scratches we make to represent vectors and tensors, *are* the universe, the structure itself, and that what we see, the physical, the mechanical, are mere outward clothings of the eternal mathematical thought. We——"

"In other words, your machine is an improvement on the others," Polger interrupted hastily. He had heard Wilmot's peculiar theory before, and it still didn't quite make sense to his practical mind.

Wilmot smiled grimly. "Not at all! My machine will, I hope, build from where the best of us leave off. In other words, it will take our most complicated tensors and vectors and proceed as though it were itself a supermathematician. It will construct of its own accord new problems, new equations, beyond anything I, or any one else, have been able to accomplish so far. It may even," and Polger was surprised at the light in his friend's eyes, "create an entirely new order of mathematics, something as far beyond tensors as they are beyond the multiplication table."

Polger's cigar had gone out. He forgot to relight it. "But then you have created a real thinking machine," he said slowly.

Wilmot nodded. "Exactly!"

THE LAWYER was bewildered. He looked again at the complex array of steel parts and photo-electric cells. It was exactly the same as before—incomprehensible.

"But how? What force——"

"Light, electricity, energy waves," Wilmot responded promptly. "It all

goes back to my theory, the one you listen to without grasping at more than the hem of my meaning. Mathematics is real. The higher equations, deduced solely from the inner consciousness of our greatest minds, without former roots or counterparts in the world of what to us is physical reality, have, for all their seeming violation of common sense and things as we see them, satisfactorily explained the constitution, the very essence of the universe."

"I still don't——"

Wilmot disregarded the interruption. "I felt therefore that these symbols we evolved were as much existent and endowed with a life of their own as, let us say, the Earth and stars and the atoms whose actions they explained and predicted. Suppose, I thought, we could actually clothe these abstract symbols with physical reality, make them manifest to our senses, would they not interact, produce new forms, even as hydrogen and oxygen in close contact will form a new substance—water."

Polger lighted his dead cigar with a shaky hand. Had his brilliant friend gone mad from too much pondering?

"I am not crazy," Wilmot said quietly. "I succeeded. Each disk can be moved to a position corresponding to a directional vector. Each lever, depending on the amount of thrust, warps the flat steel and creates a condition of stress and strain corresponding to a tensor. A steady beam of light, playing upon the warped, directed disks, suffers certain minute changes. This accords with the theory of relativity. The rays are then reflected to the photo-electric cells, each contacting a single disk.

"Electrical currents are set up in the cells, and these in turn are focused in beams within that globe you see suspended in mid-air."

Polger, his head spinning a bit, craned his neck upward again. "I was wondering about that," he said.

"That," said Wilmot, "is my great-

est creation. By a series of strategically placed magnets, thermostats, electrical, and other controls, I have eliminated or neutralized every possible force that might have acted upon that quartzite globe. To all intents and purposes the vacuum within is a section of empty space, quiescent in a universe of its own. As far as it is concerned, the rest of the world of matter and force has no meaning, no existence."

Polger gasped and looked a bit more respectfully at the motionless orb. "And what may the purpose of all this be?" he asked faintly.

"It permits the electrical impulses, each slightly varied by its vector and tensor component, to interact without the disturbance of any outside force. Nowhere else in all space does such a condition obtain."

"I begin to see," Polger said thoughtfully. "And you think that the mathematical waves, so to speak, finding themselves free of all interference, will combine to form new equations, which in turn will fall into new combinations—new to humanly acquired mathematics?"

"Exactly!" Wilmot grinned delightedly. "And I've evolved a method for imprinting the new series on revolving drums from which it will be possible to effect intelligible translations."

Polger felt himself in the presence of great forces. He was awed. Sudden desire swept through him. "Try it out now, Hugh," he said quickly. "If it works—"

Wilmot smiled and shook his head. "It isn't as easy as all that," he said. "I haven't completed the series of tensors I want to feed into the machine. I want it to be the highest flight yet of the human mind, the next step after Einstein's world equation of ten variables. To-morrow it will be finished. And to-morrow night— But we'll sleep on it, old friend."

A half hour later the house was

dark and still. Wilmot, strangely enough, snored soundly, while it was Polger who tossed and stared wide-eyed at the blackness of the night outside his window. Sally, the cook, in her room in the attic, dreamed, as she did every night, of the handsome prince who came to solace her subconscious for her dry and withered spinsterhood.

BILL SIKE moved silently to the rear of the house. Thick clouds obscured both moon and stars, and the house itself was but a vague shadow. A perfect night for a burglar!

He flicked his pencil flash cautiously at the low-lying kitchen window. Louie the Eel had taught him that early in the game. "Most people," remarked Louie sagely, "is dumb. They lock their doors with fancy locks an' patent chains; then they go ahead an' leave a window wide open."

Bill chuckled. Smart bird, Louie! For, sure enough, the upper sash gaped invitingly. Within seconds he was inside, feeling his way carefully through blackness. The next room was the dining room. He cast a small questing pencil of light over its contents. An old-fashioned sideboard of rubbed mahogany took up almost the entire opposite wall. Bill grunted his satisfaction. Sideboards meant silverware, and silverware was convertible into cash. Louie the Eel took care of that. He shifted his sack to his other hand and advanced.

In so doing, he brought his shin in sharp contact with the edge of a chair. The chair moved violently against an end table, which tottered and sent a lamp crashing. Bill himself howled with anguish at the pain to his shin. He had not learned the art of repression.

Arnold Polger, still awake—his restless thoughts had traveled from his friend's machine to more important things, to wit, whether the bill he had

sent to a certain client had not been underestimated—sat bolt upright. He shouted fatuously: "Who's there?"

Sally, with the salt kisses of her dream prince wet upon her lips, thudded back to reality and screamed. Wilmot shot from healthy sleep to instant awareness. His first thought was of his precious machine. He left his bed in a single bound, and his bare feet made quick patter on the carpeted stairs. Polger groaned and followed, stubbing his toes in the blackness.

Siike was aghast. His first solo burglary had ended in disaster. His shin throbbed and his flash had flown from his hands. It lay at the farther end of the room, making a pool of radiance. He glanced wildly around.

Feet and accompanying voices were catapulting down the rear stairs, cutting off flight through the kitchen, the way he had come. A door loomed dimly to his left. He darted through it, cursing.

Some one yelled "Stop!" behind him. Panic gripped his vitals; he lost his head. He smashed straight on, missing the door to the outside and safety, smacked his shoulder against the opening to the spare chamber, spun around, howled, and went headlong into the darkness within.

Cold metal caught at his feet, tripped him. He thrust his hands out blindly to save himself, and sprawled, flat, outstretched, heavy, against serried banks of levers, buttons, and disks.

At once there was a whir. Things moved and slithered beneath him. A humming sound smote at his ears. Outside there was more sound—the noise of an aroused household.

He scrambled off the spinning contraption, whining in self-pity. Then he screamed in good earnest. His head was back and his eyes glared. He forgot the inglorious end of his venture, the looming hoosegow.

UP ABOVE him, suspended in mid-air, was a huge shining globe. The light within it was ghostly, shimmering. It looked to his affrighted imagination like a bodiless head come to plague him for his sins.

Even as he stared, paralyzed into stone, mouth still open from his scream, the globe swirled with strange green currents which grew thicker and thicker until they seemed liquid, oily.

Fantastic configurations appeared and disappeared within its depths, succeeded each other in rapid succession. Cubes, rhomboids, cones, paraboloids, then shapes and forms beyond all human or physical conceiving—fourth dimensional, fifth, multidimensional, swirled and melted with the rapidity of their contriving. Higher and higher they built up, pure sirupy vibratory essences, until the whole mass seemed to explode of its own complexity.

The globe expanded into an unknown dimension and disappeared suddenly. Waves of green luminescence beat outward, surrounded the burglar, pierced through the confining walls of the room as though they were so much glass, went on and on with unimaginable rapidity, beyond the speed of light, past the substantial stone of the house, into the night, engulfing, swallowing up, fields and rivers and towns and the solid earth itself; New York, St. Louis, San Francisco, swift-cleaving liners in mid-Atlantic, soft green isles in the South Pacific; London, Paris, Moscow, Shanghai, the Gobi, Eskimo igloos in frozen Greenland, whales spouting in Ross Sea.

Out into space the radiance went, impacted on the Moon, pierced it through and through with green fires, expanded outward with ever-increasing velocity. Within seconds Mars, Jupiter, Pluto were aflame with virescent shine; the Sun shuddered and masked its yellow heat under the tremendous influence.

And still the beating waves did not

cease. Space rolled up like a well-scanned parchment before their gigantic strides. Alpha Centauri winked suddenly green; so did Sirius, Procyon, and far Aldebaran. The Milky Way glowed with the strange gleam and the Galaxy was hurdled. On and on, spanning the nebulae, racing through island universes, past Andromeda, until the very outposts of the scheme of things entire were far behind. Out into the emptiness, where matter did not exist, where space itself was a figment, where the waves of mathematical probability were the only reality in the inchoate, unstirring dreams of creation.

And the heart of the universe, the core of all things, was in a room in Wilmot's house.

A ball of liquid green light hung motionless where the globe had been. Within its strange consistency was a paradox. Featureless forms, passive activity, abstractions made visible, mathematical equations of dizzying complexity clothed in ceaseless vibration.

Bill Sike moaned and remained rooted to the floor. Terror robbed him of speech, of movement, of any human faculty of comprehension. Outside, Hugh Wilmot, pajama-clad, hurled himself toward the open doorway and crashed into an invisible wall that sent him back, battered and reeling.

Arnold Polger, barefooted, came panting up. He stopped abruptly, stared. "What the devil's happened?" he gasped.

Wilmot did not answer. He crouched like a linesman, smashed forward again. He brought up short, his shoulder compressed, and once more he fell back, face twisted in agony, frenzied with something beyond agony. Yet no obstruction showed.

Polger plucked at him with restraining hand as, insanelly, he bent to resume his futile charge. "Don't be an ass," he said sharply. "You'll kill yourself."

Wilmot turned his tortured face to

him. "Don't you see?" he almost sobbed. "The machine—it's worked! Some one—that man in there—started it—somehow——"

POLGER peered through the luminescence that bathed him, together with the universe, and saw the fantastic ball within, the fear-frozen figure of Bill Sike. His legal-trained mind responded immediately. "He's a burglar," he snapped. "I'll call the police."

"To blazes with the police!" Wilmot shouted. "I'd give a million dollars to be in there, in his place. Something has happened that lay beyond my wildest dreams."

"What?"

Sally, stringy gray hair in iron curlers, voluminously wrapped in a flannel nightgown, stumbled down the stairs. The queer green radiance was unmerciful to her sallow, dried-out features. She saw the globe of light, saw Bill Sike, who, released from his paralysis, made a wild dash for the door, to be smashed back from nothingness and converted into a gibbering, moaning wretch. She screamed shrilly.

"Shut up, Sally!" Wilmot snapped.

But Sally was beyond hearing. She was already out of the house door, into the green luminescent night, running, sobbing, shrieking, cutting her bare feet on stubbly grass, crying doom to all the world. Nor was she alone on her wild flight that night.

Wilmot caught his breath. "It's mad, mad! The equations have formed in the globe; they have spawned and combined and propagated new equations—I catch faint semblances of mathematical abstractions clothed in being within; but they've done more than that. They're affecting the universe; changing its laws maybe."

He glared at Polger in a sort of futile frenzy. His voice rose almost to a scream. "They *are* the universe! You, I, are mere illusions, manifestations of

their eternal configurations." He gripped his friend's arm with fierce strength. "Good Heaven, man! Do you realize what it may mean? Suppose they spawn a new type of mathematics, non-Euclidean, non-Riemannian, non-tensor, non-vector, something that does not fit in with the present laws on which our universe is constructed."

"Well, suppose they do?" Polger said a bit impatiently. So far, it was a mere matter of light phenomena due to that peculiar globe which, strangely enough, had disappeared. He was more interested in catching the burglar. The man might come out of his groveling fit any moment and make a break for it.

"You still don't understand!" cried Wilmot. "Our universe would vanish like smoke into the limbo of forgotten things together with the underlying equations which were its basis. Another universe would take its place, consonant with the new mathematics. That light is spreading, Heaven only knows how far. It's alive, sentient, instinct with the newborn equations. It will devour, destroy, the old, the accustomed."

Polger stared blankly. His practical mind fumbled at the implications. "And what will happen to us?" he asked feebly.

Wilmot laughed bitterly. "Us?" he echoed. "We'll be dissolved with the rest of the illusions. There'll be no place for our symbols in the higher mathematics. If only I could get in there, to stop the machine, to see how it is set."

He shouted, hoping to break through the wall of force with his voice, to reach the groveling burglar, to make him understand what to do. But Sike rolled on the floor in a veritable fit, nor could he have heard in any event. The force bubble that had been thrown around the room was impenetrable to any agency known to man.

POLGER still did not believe. He shifted uneasily from one bare foot to another, acutely conscious of his state of undress, of the fact that the uncanny green light was playing nasty tricks with their complexions. He wanted to call the police, the fire department. Those very practical embodiments of law and order in a universe of law and order would know just what to do.

Wilmot's cry brought his head jerking up. "It's come! The new order of equations. They've just spawned. Our universe is done for. Good-by, old friend! If only I could understand, get in there——"

His voice trailed off; he fell unconscious.

Polger lasted a while longer. Perhaps his physical configurations conformed a bit closer to the new laws. Bill Sike lay inside, mouth agape, foam frozen on his lips, eyes protruding, to all appearances dead.

Polger saw the uncircumscribed ball of green liquid flame change slowly to a pure supernal orange of dazzling hue. Figures, vibrations, swarmed in ceaseless whirling within. Then suddenly, there was a soundless explosion, the strange component abstractions fell into a pattern—a pattern into the depths of which Polger's mind penetrated for one instant of breathless, awful comprehension.

For that one instant he was in tune with the new universe. Then, as the ball expanded and rushed to engulf him, he, too, fell unconscious. Never after was he able to explain what it was he had seen, what for that one dazzling second he had comprehended. Wilmot swore and fumed over him, even as he did over Bill Sike, without result.

Polger shook his head feebly and gabbled about forms that had gone beyond all dimensions, that possessed no dimension at all, forms for which time had

no meaning or existence, and which—most stupendous of all—were pure thought, pure consciousness, pure life, stripped of all physical excrescences.

Wilmot, the one man who could have explained, who could have duplicated the phenomena, had not observed. It was given to a burglar to initiate and a lawyer to witness the finale, and none other. For which the universe as we know it, to the farthest nebula, should give heartfelt thanks. It was close enough to destruction as it was, and Wilmot's caution could be ill relied on in the presence of greater and vaster scientific experiments.

THE NIGHT MAIL was flying rather high over the Alleghanies. The passenger, a radio star in a hurry to get to a big movie contract in Hollywood, leaned forward toward the cockpit.

"Everything seems lighted up with green lights," he said conversationally. "What's up—a celebration?"

The pilot heard him perfectly. For the first time he realized what was wrong, what had been bothering his subconscious for the past few minutes without his being able to lay a finger on it.

The deathly silence; the absence of all sound. The roar of the propeller was muted to nothingness. They seemed to be swimming in a motionless sea of green flame. For a wild moment he thought they were falling, yet his instruments showed motion, and the body throbbed from a noiseless motor. The lights, too, bothered him.

He swung half around, anxiously. "I don't know just what——"

Orange blasts enveloped them. The next instant both men felt violently compressed into themselves. It was the last sensation they ever had. The plane and its occupants vanished; in their place a tiny, microscopic globule—electrons and protons compacted into a unitary mass—fell with terrific velocity to-

ward the earth, to bore of its own incredible weight a mile below the surface.

THE GREAT liner, *Ladonia*, nearing the coast of Europe, was ablaze with lights and merriment. It was the last night on board, and a fancy-dress ball was in progress. The saxophones moaned and the violins tossed off spangles of glittering notes. Fairy princes danced with Carmencitas and whispered words into small ears that brought quick laughter. The huge punch bowl ebbed and filled with magic rapidity.

The bar was crowded with men, flushed of face, beefy, righteously scornful of being togged out like Boy Scouts. Couples snuggled on steamer chairs near the lifeboats, oblivious to dance and bar and sky. A woman strode purposefully along the deck, peering into the faces of the bemused couples. Their faces were green with strange illumination, yet they did not notice.

The woman, hatchet-face grim with repressed fury, pursued her tour of investigation. In the shadow of a lifeboat she spied two dim figures locked in each other's arms. Lips were pressed tightly together.

She bore down on them like a destroying demon.

The man heard, raised startled eyes. "Maria!" he gasped. Without another word he tore out of the arms of his lovely companion, and fled down the deck as if all the devils of hell were after him.

The woman turned on the girl: "You dirty tramp, you——"

The captain stood on the bridge, legs astraddle. He stared into the night. "I've never seen an aurora like this before," he told the first officer.

"No more have I," said his subordinate. "It came up like a blanket. Look at the moon, too, and the stars. They're all green."

The telephone rang The steersman

said excitedly. "The compass has gone haywire, sir. And the ship doesn't respond to the wheel."

Another telephone jangled—the engine room. The shocked voice of the engineer. "Steam's gone, sir. And the fire's out; the coal lies dead and cold. Tried to light a match, sir, and the blamed thing——"

The universe turned orange.

The liner *Ladonia* tilted, shuddered, and rose straight into the air. A huge waterspout followed her.

The captain sprang toward the pilot house. The ship tilted more, and he sprawled out into the open; a whirling tiny figure that rushed up and up, keeping even pace with the soaring liner.

The fleeing man, avoiding the wrath of an aroused wife, stumbled and catapulted over the rail. He, too, became a satellite of the ship.

The fancy-dress ball was a confusion of struggling, screaming, and floating creatures. The ship accelerated its mad upward flight; ice formed a quick curtain; the cold of the stratosphere bit into the thinly clad bodies of the passengers. Their screams grew more and more feeble; blue congealment stilled their struggles.

Then the air rushed out into space with a great *swoosh*; the limits of the atmosphere had been reached. The frozen bodies developed steely hardness; those few who were still alive literally exploded from release of pressure.

Higher and higher, faster and faster, the great ship fled, followed by masses of ocean turned into glittering ice, followed by the dead captain and the man whose wife had caught him in *flagrante delicto*. A huge cosmic morgue, with thousands of dead bodies floating and bumping within its vast interior, the liner sped upward and outward, past the Moon, past Mars, out into the region of the asteroids.

By that time the universe had settled back to normal, and the *Ladonia* became

a new asteroid, swinging around the Sun in a majestic period of five years and thirty-four days.

The laws of gravitation had been reversed for the particular sector of the Atlantic Ocean in which the liner had unfortunately been.

FOR THE NEW mathematical order of things proved positively freakish. Vast portions of the universe were left wholly untouched; others had only certain limited modifications in the laws governing being; circumscribed areas received the full impact and vanished or were irreparably changed.

Wilmot tried to explain it afterward. "You see," he told Polger, "my machine was not quite powerful enough. The superequations filled with the universe, it is true, but spottily. Had their influence been evenly propagated, nothing would have remained, not even space and time. Then again, the equations themselves realized before it was too late——"

THE NEW YORK telephone exchange was extremely busy, even though it was past midnight. Girls said monotonously: "Number, please! Thank you, I'm ringing them. Sorry, sir, the line is busy. No, madam; I don't know what is happening."

All New York had awakened at the curious green glare that shrouded the city, blotted the heavens, masked the normal yellow glow of millions of lights. All were possessed with the same idea. This was the weather bureau's job, for which good citizens paid taxes. Ask them about it.

James B. Wales, night editor of the *Clarion*, jiggled his phone furiously. "Listen, sister," he said hoarsely, "I got to get the bureau."

"Sorry, sir, line's still busy."

"T'hell with that. I'm the *Clarion*. Cut 'em all off and give me a wire. Be

a good kid; I'll take you out to dinner, and a show."

The phone went dead. He swore and pushed black streaming hair out of his eyes.

"The dirty so and so!" he said in low earnest accents.

But the girl was not to blame.

For just then the orange wave lashed out.

Where the gigantic setback cliff of steel and tan stone had stood was a gaping hole. The Telephone Building was gone, vanished forever, never to return. Some topsy-turvy shifting of a mathematical formula in its vicinity had snatched it, thrown it headlong into a superdimension. It might have been right where it had always been, but our normal dimensions did not contain it.

A year later, when all hope of its return was abandoned, a new and larger building was erected on the spot. Yet Wilmot always had an uncomfortable feeling that the ghost, the superdimensional ghost of the kidnaped structure, glared forlornly at and through him every time he entered its precincts.

For by some strange unaccountable freak, telephone communication with the world as it is had not been lost. Engineers traced it eventually to a wire that seemed to taper into nothingness. A guard was placed around the wire to prevent accidents. The guard was maintained for at least a month after the final message had come through.

Nellie McCafferty was the heroine of the tragic misadventure, the girl whom Jimmy Wales had called unmentionable names. He took every one of them back, blazoned her name all over his headlines, raised a whacking big fund for the relief of the parents whom she had supported out of her scanty salary.

And no wonder!

For through her he achieved the biggest scoop in the history of the newspaper business. Imagine talking directly with a girl in another dimension, get-

ting her sensations, the sensations of a thousand other men and women in that crazy place; people, who to all intents and purposes, were dead, vanished.

It was his connection, cut off by the orange flash, which still functioned.

For days she stuck to her self-appointed task. They were, she told Jimmy, in a world of utter blankness. No light, no sound, no depth, or height, or width; nothing but a flat impenetrable grayness. Of course, said Wilmot, when he heard of it. They were still three-dimensional people in a three-dimensional building. The new dimensions could mean nothing to them.

At first the thousand marooned humans called frantically for rescue. They did not understand, did not realize why, when they tried to leave through open doors and windows, there was nothing for them to step into. It was a curious sensation, which, in spite of faithful efforts to reproduce for the benefit of the people on Earth, held no meaning.

Then awareness came to them, and with it fright. Rescue from their predicament was impossible. Though doubtless as near to their own kind as interpenetrated bodies could be, they might as well have been out on Orion's belt.

For weeks the world hung with fascinated horror on the slowly unfolding tragedy. Only a thousand lives were involved, as against the millions who had died all over the Earth, and the possible countless billions of forms who went crashing in debacle throughout the universe. But here was novelty, gigantic drama, human interest, everything that went to make up a perfect play. Ghosts from beyond our time and space talking with us daily!

And the *Clarion* grew fabulously in circulation, and Jimmy Wales was content.

Nellie McCafferty told in plain, unadorned words the story of their growing fear, the trapped feeling. Then came hunger; thirst a little later. The sup-

plies of the company's cafeteria were scanty and had to be rationed. Then came a worse difficulty; the air in the building was giving out, growing foul and stale with overuse.

Day by day she communicated; slowly, more painfully each day. Then finally, the phone rang.

Wales lifted it; there was a faint whisper, a gasp. "Yes, yes, Nellie!" he half shouted. He swears, and so that night's edition had it, that he heard her say: "Good-by, people of Earth. I am the last alive."

Then, and this was indubitable fact, the connection broke, irrevocably. The superdimension had lost contact.

To Jimmy Wales' eternal credit be it stated that he had to wink his eyes rather violently for a moment; then once more he was the hard-boiled editor.

"Copy desk; rewrite man, boy, press-room!" he bellowed. "Stop everything, take this for the final. Wow, what a story!"

THE TEEMING province of Shantung in China disappeared, dissolved as though it had never been; land, people, animals, rivers, thereby bringing to an abrupt end the plans of outside nations to gobble up this delectable bit of territory.

In its place was a hole, a gigantic incredible hole extending over thousands of square miles of area and descending in a smooth bottomless pit a trifle less than a thousand miles into the interior of the Earth.

Geologists and scientists of all nations, with scarcely a thought for the millions of unfortunates whose mathematical laws had vanished and with them their own existence, descended with loud glee upon this unparalleled opportunity to see the very bowels of the Earth bare.

For over a hundred years they were busy, inventing machines to take them down where no man had been before,

studying strata, examining specimens, wrangling, concocting new theories to fit new facts, living, growing old, bearing a new crop of scientists to take their places, all in an unprecedented state of excitement.

LUCKILY sparsely inhabited, North Australia stood up on end for hundreds of miles, to remain a fabulous mountain visible for thousands of miles. The Pacific rushed into the depression and formed a new ocean. As a result, the general level of the Earth's seas was lowered, and Atlantis was rediscovered. It proved to be in the shallows of the Caribbean Sea. Stately buildings, unimaginable artifices of ancient people, rose, covered with slime and mud.

But there was another more serious effect of this upending, coupled as it was with certain other changes in the structure of the solar system. The delicate balance had been destroyed. The Earth's year was cut to three hundred and thirty-six days, seven hours, two minutes, and prominent scientists issued grave warnings. At the present rate, all other things considered, the year would become shorter and shorter, and within fifty million years, Earth and all its works would fall into the maw of the Sun.

At first, however, the news had been very much more alarming. The Sun and planets of the solar system were functioning, with slight modifications, according to former schedule. But the rest of the universe seemed to have gone haywire. The background of stars went round and round in streaking circles of flame. It was impossible to register the number of revolutions per day, so fast did they swing from pole to pole. Not only that, but the hitherto fixed stars were actually moving across the face of the heavens, visibly, shifting whole minutes of arc from day to day.

Astronomers turned gray overnight. Rough calculations showed speeds that

were absolutely unbelievable—trillions of miles per second. It was impossible; it was mad; it was insane! Wilmot finally hit upon the explanation.

Time had changed for the solar system. A new system of coördinate functions had displaced the old, while the rest of the universe had remained unaffected.

Time had speeded up in the region of the Sun and its planets. A thousand years of sidereal time had been compressed, for us, into a single instant of existence. The rest of the universe was growing old while we still remained infants, so to speak.

This strange state of affairs made no appreciable difference in our private concerns, inasmuch as, aside from the clock of the stars, life seemed to go at the same pace as before. But it played the very devil with sidereal astronomy. All calculations, all former data, had to be revised.

NOR WERE these the only profound disruptions due to the release of sets of formulae and equations that had no former counterparts in the universe. Stars blanked out completely; others were discovered after much painful searching in an entirely different part of the heavens. Instead of an expanding space, the nebulae seemed simultaneously to have made up their minds to return to the primeval gigantic atom from which they had originally emerged.

New life forms appeared suddenly on earth, strange sentient creatures whose physical basis was silicon, who neither breathed nor ate nor seemed to move. Nor was this inexplicable. The mathematics of evolutionary processes had shifted, too.

Fortunately they all soon died.

The maddest freak of all, however, was the simultaneous appearance of *formerly* respectable material things in different parts of the world. The Empire State Building, for instance, found

itself in the middle of the Arabian Desert. Travelers, whose reputation for unswerving honesty and sobriety was unimpeachable, reported it there, solitary and somewhat ashamed. Yet the Empire State Building still occupied its accustomed quarters at the corner of Thirty-fourth Street and Fifth Avenue. Mount Everest, while still a fixture in far-off Tibet, also achieved a second domicile not far from Washington, to the delight of intrepid mountain climbers who had not the wherewithal to make the expensive and arduous journey to the Himalayas.

Not so pleasant was the predicament of a poor devil of a bank clerk who found himself suddenly three people, wandering the streets of the same city, meeting himself over and over again, to his own vast confusion and to the utter bewilderment of a wife and four children who had not followed him in his metamorphosis. Quite naturally she raised a to-do about such goings on, and quite as naturally each of the three simulacra objected to further support of a family, who, each argued, refused whole time conjugal and filial duties.

At last the matter reached the courts and became a *cause célèbre*. The case dragged for seventy-five years. When a decision was finally reached, all of the original participants were dead, and the learned jurist who wrote the closing opinion labored under the reasonable misapprehension that it had something to do with a remission of taxes on a non-existent plot of land.

WILMOT slowly became aware of his surroundings. He was flat on his back and his side hurt. Polger lay near him, breathing stertorously. A bit farther off, eyes closed, and moaning through clenched teeth, was the burglar, Bill Sike.

Where was he? What had happened? He opened his eyes. The green light had gone; in its place was darkness

streaked by curious wheels of fire. Underneath him, too, was damp strangeness. He felt weakly with his hands.

Earth and grass and small stones, wet with dew. He was out on the lawn, in the open. He sprang to his feet, panicky. How had he been carried out of the house? What about his precious machine—the mathematical life to which it had given birth?

He strained feverishly. It was his own lawn, without doubt. There were the two beech trees in which he took so much pride; to the left, as ever, nestled the little rock pool.

But the house—it was gone! A depression showed where it had stood.

Polger staggered to his feet, eyes bloodshot, staring. Sike instinctively started to creep away on hands and knees.

"No, you don't," Wilmot said harshly, and grabbed him by the collar.

Bill whined. "Please let me go, mister. I got five orphaned children, an' I only did it to get 'em some grub. Please don't send me t' jail."

Wilmot laughed wildly. "Jail? There are no jails. I want you to tell me exactly what you did." He shook the shivering burglar. "Do you hear?"

But as has already been stated, Bill's information was not illuminating.

MORNING came on a stricken universe. Wilmot's house was definitely gone. With it the machine, the cause of the tragic adventure, and also the mathematical globe of equations.

It was decided to keep quiet about the machine.

But Wilmot and Polger discussed indeterminately in the privacy of their own quarters.

"What," asked the lawyer for the hundredth time, "happened to the globe of equations?"

Finally Wilmot said hesitantly: "It may only have been a dream, but while I was unconscious, it seemed to me that I was aware of certain things happening in the globe. The configurations, the pure inherent thoughts, were dissatisfied. They had conformed parts of this universe to their own laws and theorems, but not all. The old laws were in the main too powerful. There was tremendous conflict.

"It was therefore decided to build a universe of their own, completely outside our time and space, where the outward habiliments would be the harmonious counterparts of their equational desires."

Polger pondered a moment. He rose. "Thank God!" he said with due deliberation.

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The Skylark of Valeron

Part Two of the greatest story of the Skylark series. Start it now if you missed part one

by Edward E. Smith, Ph. D.

Illustrated by Elliot Dold

UP TO NOW:

Richard Seaton discovers a catalyst, later called Rovolon, capable of liberating the intra-atomic energy of copper. He and Martin Crane build a space ship, "Skylark of Space," and plan a chain of superpower stations to supply industry with cheap power. Brookings, of the World Steel Corporation, tries to steal the invention. Failing, he calls in DuQuesne, a thoroughly unscrupulous chemist, who raids Seaton's laboratory.

DuQuesne builds a space ship from the stolen plans and abducts Dorothy Vaneman, Seaton's fiancée, and Margaret Spencer. In her struggles Dorothy turns on full power and, all on board unconscious, the ship drives through space until her copper is exhausted. Seaton and Crane have followed DuQuesne by means of an "object-com-pass" focused upon his person, and effect a rescue.

The three scientists, now working together, manage to free the "Skylark" from the attraction of the Dark Mass, but their fuel is low. They visit several planets—one rich in Rovolon, one having an atmosphere of gaseous chlorin, and one materialized by a group of beings purely intellectual, instead of physical, in nature.

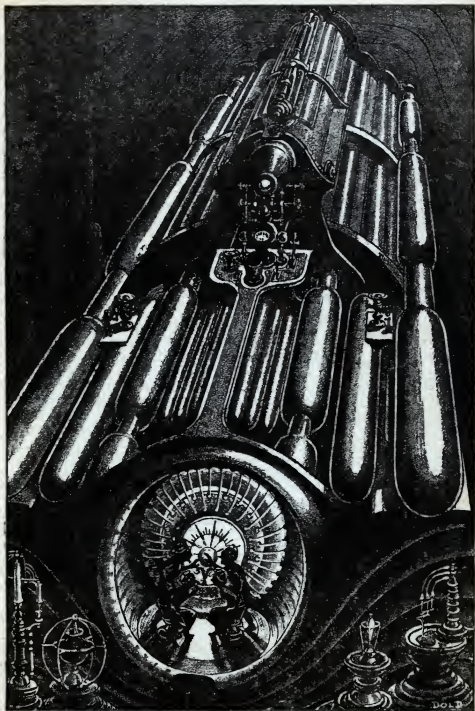
After various adventures they escape and fly toward a cluster of green suns. They land upon Osnome and are of

service to Kondal, a nation of that world, against Mardonale, its other nation. Dunark, of Osnome, and Seaton, operating a "mechanical educator," accidentally superimpose the entire brain of each upon that of the other. Seaton, now overlord of Osnome, marries Dorothy and Crane marries Margaret. They return to Earth, DuQuesne escaping from the "Skylark" before it lands.

Summoned by Dunark, Seaton and his friends return to Osnome in "Skylark Two." On the way they meet and defeat a war vessel of the Fenachrone, a quasi-human race of immense scientific attainments whose goal is universal conquest. DuQuesne, bent on destroying Seaton, rescues a survivor of the warship and agrees to return him to his own planet in exchange for his help in stealing a Fenachrone battleship. Both are lying—DuQuesne has no intention of liberating the prisoner, and the Fenachrone engineer intends to betray the Terrestrials to his guard ships.

In quest of a science to equal that of the Fenachrone, Seaton visits first Urvania, a planet then at war with Osnome; Dasor, a watery planet inhabited by a race of almost amphibious humanity; and lastly Norlamin, where he finds the high science of which all humanity is so in need.

Rovol, First of Rays, and Drasnik, First of Psychology, each impress upon Seaton's brain a large measure of his



Dorothy, Margaret and Crane donned headsets and seated themselves in the base of the great projector.

own knowledge. They build a fifth-order projector and destroy all the Fenachrone vessels in space save one, which has left this Galaxy entirely and is out of reach. It is decided that the planet of the Fenachrone must be destroyed by bombs of atomic copper. "Skylark Three" is built and sets out after the fleeing ship. Overtaking her far out in intergalactic space, "Three" is the victor in a battle of giants.

DuQuesne and Loring, his assistant, drug their captive Fenachrone engineer and read his mind. They capture, first a scout ship and then a first-class battleship, in which they escape the explosion of the whole Fenachrone planet. DuQuesne then goes in search of Seaton—"I shall find him if I have to comb the Galaxy, star by star!"

V.

SKYLARK THREE, the mightiest space ship that had ever lifted her stupendous mass from any planet known to the humanity of this, the First Galaxy, was hurtling onward through the absolute vacuum of intergalactic space. Around her there was nothing—no stars, no suns, no meteorites, no smallest particle of cosmic dust. The First Galaxy lay so far behind her that even its vast lens showed only as a dimly perceptible point of light in the visiplates.

The Fenachrone space chart placed other Galaxies to right of and to left of, above and below, the flying cruiser; but they were so infinitely distant that their light could scarcely reach the eyes of the Terrestrial wanderers. Equally far from them, or farther, but in their line of flight, lay the distant Galaxy which was their goal.

So prodigious had been the velocity of the *Skylark*, when the last vessel of the Fenachrone had been destroyed, that she could not possibly have been halted until she had covered more than half

the distance separating that Galaxy from our own; and Seaton and Crane had agreed that this chance to visit it was altogether too good to be missed. Therefore the velocity of their vessel had been augmented rather than lessened, and for uneventful days and weeks she had bored her terrific way through the incomprehensible nothingness of the interuniversal void.

After a few days of impatient waiting and of eager anticipation, Seaton had settled down into the friendly and companionable routine of the flight. But inaction palled upon his vigorous nature and, physical outlet denied, he began to delve deeper and deeper into the almost-unknown, scarcely plumbed recesses of his new mind—a mind stored with the accumulated knowledge of thousands of generations of the Rovol and of the Drasnik; generations of specialists in research in two widely separated fields of knowledge.

Thus it was that one morning Seaton prowled about aimlessly in brown abstraction, hands jammed deep into pockets, the while there rolled from his villainously reeking pipe blue clouds of fumes that might have taxed sorely a less efficient air-purifier than that boasted by the *Skylark*; prowled, suddenly to dash across the control room to the immense keyboards of his fifth-order projector.

There he sat, hour after hour; hands setting up incredibly complex integrals upon its inexhaustible supply of keys and stops; gray eyes staring unseeingly into infinity; he sat there, deaf, dumb, and blind to everything except the fascinatingly fathomless problem upon which he was so diligently at work.

Dinner time came and went, then supper time, then bedtime; and Dorothy strode purposefully toward the console, only to be led away, silently and quietly, by the watchful Crane.

"But he hasn't come up for air once to-day, Martin!" she protested, when

they were in Crane's private sitting room. "And didn't you tell me yourself, that time back in Washington, to make him snap out of it whenever he started to pull off one of his wild marathon splurges of overwork?"

"Yes; I did," Crane replied thoughtfully; "but circumstances here and now are somewhat different from what they were there and then. I have no idea of what he is working out, but it is a problem of such complexity that in one process he used more than seven hundred factors, and it may well be that if he were to be interrupted now he could never recover that particular line of thought. Then, too, you must remember that he is now in such excellent physical condition that he is in no present danger. I would say to let him alone, for a while longer, at least."

"All right, Martin, that's fine! I hated to disturb him, really—I would hate most awfully to derail an important train of thought."

"Yes; let him concentrate a while," urged Margaret. "He hasn't indulged in one of those fits for weeks—Rovol wouldn't let him. I think it's a shame, too, because when he dives in like that after something he comes up with it in his teeth—when he really thinks, he does things. I don't see how those Norlaminians ever got anything done, when they always did their thinking by the clock and quit promptly at quitting time, even if it was right in the middle of an idea."

"Dick can do more in an hour, the way he is working now, than Rovol of Rays could ever do in ten years!" Dorothy exclaimed with conviction. "I'm going in to keep him company—he's more apt to be disturbed by my being gone than by having me there. Better come along, too, you two, just as though nothing was going on. We'll give him an hour or so yet, anyway."

The trio then strolled back into the control room.

But Seaton finished his computations without interruption. Some time after midnight he transferred his integrated and assembled forces to an anchoring plunger, arose from his irksome chair, stretched mightily, and turned to the others, tired but triumphant.

"Folks, I think I've got something!" he cried. "Kinda late, but it'll take only a couple of minutes to test it out. I'll put these nets over your heads, and then you all look into that viewing cabinet over there."

OVER his own head and shoulders Seaton draped a finely woven screen of silvery metal, connected by a stranded cable to a plug in his board; and after he had similarly invested his companions he began to manipulate dials and knobs.

As he did so the dark space of the cabinet became filled with a soft glow of light—a glow which resolved itself into color and form, a three-dimensional picture. In the background towered a snow-capped, beautifully symmetrical volcanic mountain; in the foreground were to be seen cherry trees in full bloom surrounding a small structure of unmistakable architecture; and through their minds swept fleeting flashes of poignant longing, amounting almost to nostalgia.

"Good heavens, Dick, what have you done now?" Dorothy broke out. "I feel so homesick that I want to cry—and I don't care a bit whether I ever see Japan again or not!"

"These nets aren't perfect insulators, of course, even though I've got them grounded. There's some leakage. They'd have to be solid to stop all radiation. Leaks both ways, of course, so we're interfering with the picture a little, too; but there's some outside interference that I can't discover yet."

Seaton thought aloud, rather than explained, as he shut off the power.

"Folks, we *have* got something!

That's the sixth-order pattern, and *thought* is in that level! Those were *thoughts*—Shiro's thoughts."

"But he's asleep, surely, by this time," Dorothy protested.

"Sure he is, or he wouldn't be thinking that kind of thoughts. It's his subconscious—he's contented enough when he's awake."

"How did you work it out?" asked Crane. "You said, yourself, that it might well take lifetimes of research."

"It would, ordinarily. Partly a hunch, partly dumb luck, but mostly a combination of two brains that upon Norlamin would ordinarily never touch the same subject anywhere. Revol, who knows everything there is to be known about rays, and Drasnik, probably the greatest authority upon the mind that ever lived, both gave me a good share of their knowledge; and the combination turned out to be hot stuff, particularly in connection with this fifth-order keyboard. Now we can really do something!"

"But you had a sixth-order detector before," Margaret put in. "Why didn't we touch it off by thinking?"

"Too coarse—I see that, now. It wouldn't react to the extremely slight power of a thought-wave; only to the powerful impulses from a bar or from cosmic radiation. But I can build one now that will react to thought, and I'm going to; particularly since there was a little interference on that picture that I couldn't quite account for." He turned back to the projector.

"You're coming to bed," declared Dorothy with finality. "You've done enough for one day."

She had her way, but early the next morning Seaton was again at the keyboard, wearing a complex headset and driving a tenuous fabric of force far out into the void. After an hour or so he tensed suddenly, every sense concentrated upon something vaguely perceptible; something which became less and

less nebulous as his steady fingers rotated micrometric dials in infinitesimal arcs.

"Come get a load of this, folks!" he called at last. "Mart, what would a planet—an inhabited planet, at that—be doing 'way out here, Heaven only knows how many light-centuries away from the nearest Galaxy?"

THE THREE donned headsets and seated themselves in their chairs in the base of the great projector. Instantly they felt projections of themselves hurled an incomprehensible distance out into empty space. But that weird sensation was not new; each was thoroughly accustomed to the feeling of duality incident to being in the *Skylark* in body, yet with a duplicate mentality carried by the projection to a point many light-years distant from his corporeal substance. Their mentalities, thus projected, felt a fleeting instant of unthinkable velocity, then hung poised above the surface of a small but dense planet, a planet utterly alone in that dreadful void.

But it was like no other planet with which the Terrestrial wanderers were familiar. It possessed neither air nor water, and it was entirely devoid of topographical features. It was merely a bare, mountainless, depthless sphere of rock and metal. Though sunless, it was not dark; it glowed with a strong, white light which emanated from the rocky soil itself. Nothing animate was visible, nor was there a sign that any form of life, animal or vegetable, had ever existed there.

"You can talk if you want to," Seaton observed, noticing that Dorothy was holding back by main strength a torrent of words. "They can't hear us—there's no audio in the circuit."

"What do you mean by 'they,' Dick?" she demanded. "You said it was an inhabited planet. That one isn't in-

habited. It never was, and it can't possibly be, *ever!*"

"When I spoke I thought that it was inhabited, in the ordinary sense of the word, but I see now that it isn't," he replied, quietly and thoughtfully. "But they were there a minute ago, and they'll probably be back. Don't kid yourself, Dimples. It's inhabited, all right, and by somebody we don't know much—or rather, by something that we knew once—altogether too well."

"The pure intellectuals," Crane stated, rather than asked.

"Yes; and that accounts for the impossible location of the planet, too. They probably materialized it out there, just for the exercise. There, they're coming back. Feel 'em?"

Vivid thoughts, for the most part incomprehensible, flashed from the headsets into their minds; and instantly the surroundings of their projections changed. With the speed of thought a building materialized upon that barren ground, and they found themselves looking into a brilliantly lighted and spacious hall. Walls of alabaster, giving forth a living, almost a fluid light. Tapestries, whose fantastically intricate designs changed from moment to moment into ever new and ever more amazingly complex delineations. Gem-studded fountains, whose plumes and gorgeous sprays of dancing liquid obeyed no Earthly laws of mechanics. Chairs and benches, writhing, changing in form constantly and with no understandable rhythm. And in that hall were the intellectuals—the entities who had materialized those objects from the ultimately elemental radiant energy of intergalactic space.

Their number could not even be guessed. Sometimes only one was visible, sometimes it seemed that the great hall was crowded with them—ever-changing shapes varying in texture from the tenuousness of a wraith to a density

greater than that of any Earthly metal.

So bewilderingly rapid were the changes in form that no one appearance could be intelligently grasped. Before one outlandish and unearthly shape could really be perceived it had vanished—had melted and flowed into one entirely different in form and in sense, but one equally monstrous to Terrestrial eyes. Even if grasped mentally, no one of those grotesque shapes could have been described in language, so utterly foreign were they to all human knowledge, history, and experience.

And now, the sixth-order projections in perfect synchronism, the thoughts of the Outlanders came clearly into the minds of the four watchers—thoughts cold, hard, and clear, diamondlike in polish and in definition; thoughts with the perfection of finish and detail possible only to the fleshless mentalities who for countless millions of years had done little save perfect themselves in the technique of pure and absolute thinking.

The four sat tense and strained as the awful import of those thoughts struck home; then, at another thought of horribly unmistakable meaning, Seaton snapped off his power and drove lightning fingers over his keyboard, while the two women slumped back, white-faced and trembling, into their seats.

"I thought it was funny, back there that time, that that fellow couldn't integrate in the ninety-seven dimensions necessary to dematerialize us, and I didn't know anything then." Seaton, his preparations complete, leaned back in his operator's seat at the console. "He was just kidding us—playing with us, just to see what we'd do, and as for not being able to think his way back—phooie! He can think his way through ninety-seven universes if he wants to. They're certainly extragalactic, and very probably extrauniversal, and the one that played with us could

have dematerialized us instantly if he had felt like it."

"That is apparent, now," Crane conceded. "They are quite evidently patterns of sixth-order forces, and as such have a velocity of anything they want to use. They absorb force from the radiations in free space, and are capable of diverting and of utilizing those forces in any fashion they may choose. They would of course be eternal, and, so far as I can see, they would be indestructible. What are we going to do about it, Dick? What *can* we do about it?"

"We'll do *something*!" Seaton gritted. "We're not as helpless as they think we are. I've got out five courses of six-ply screen, with full interliners of zones of force. I've got everything blocked, clear down to the sixth order. If they can think their way through those screens they're better than I think they are, and if they try anything else we'll do our darnedest to block that, too—and with this Norlaminian keyboard and all the uranium we've got that'll be a mighty lot, believe me! After that last crack of theirs they'll hunt for us, of course, and I'm pretty sure they'll find us. I thought so—here they are! Materialization, huh? I told him once that if he'd stick to matter that I could understand, I'd give him a run for his money, and I wasn't kidding him, either."

VI.

FAR OUT in the depths of the intergalactic void there sped along upon its strange course the newly materialized planet of the intellectuals. Desolate and barren it was, and apparently destitute of life; but life was there—eternal, disembodied life, unaffected by any possible extreme of heat or cold, requiring for its continuance neither water nor air, nor, for that matter, any material substance whatsoever. And from

somewhere in the vacuum above that planet's forbidding surface there emanated a thought—a thought coldly clear, abysmally hopeless.

"I have but one remaining aim in this life. While I have failed again, as I have failed innumerable times in the past, I shall keep on trying until I succeed in assembling in sufficient strength the exact forces necessary to disrupt this sixth-order pattern which is I."

"You speak foolishly, Eight, as does each of us now and again," came instant response. "There is much more to see, much more to do, much more to learn. Why be discouraged or disheartened? An infinity of time is necessary in which to explore infinite space and to acquire infinite knowledge."

"Foolish I may be, but this is no simple recurrent outburst of melancholia. I am definitely weary of this cycle of existence, and I wish to pass on to the next, whatever of experience or of sheer oblivion it may bring. In fact, I wish that you, One, had never worked out the particular pattern of forces that liberated our eleven minds from the so-called shackles of our material bodies. For we cannot die. We are simply patterns of force eternal, marking the passage of time only by the life cycles of the suns of the Galaxies.

"Why, I envy even the creatures inhabiting the planets throughout the Galaxy we visited but a moment ago. Partially intelligent though they are, struggling and groping, each individual dying after only a fleeting instant of life; born, growing old, and passing on in a minute fraction of a millionth of one cycle—yet I envy even them."

"That was the reason you did not dematerialize those you accompanied briefly while they were flitting about in their crude space ship?"

"Yes. Being alive for such an infinitesimal period of time, they value life highly. Why hurry them into the future that is so soon to be theirs?"

"Do not dwell upon such thoughts, Eight," advised One. "They lead only to greater and greater depths of despondency. Consider instead what we have done and what we shall do."

"I have considered everything, at length," the entity known as Eight thought back stubbornly. "What benefit or satisfaction do we get out of this continuous sojourn in the cycle of existence from which we should have departed æons ago? We have power, it is true, but what of it? It is barren. We create for ourselves bodies and their material surroundings, like this"—the great hall came into being, and so vast was the mentality creating it that the flow of thought continued without a break—"but what of it? We do not enjoy them as lesser beings enjoy the bodies which to them are synonymous with life."

"We have traveled endlessly, we have seen much, we have studied much; but what of it? Fundamentally we have accomplished nothing and we know nothing. We know but little more than we knew countless thousands of cycles ago, when our home planet was still substance. We know nothing of time; we know nothing of space; we know nothing even of the fourth dimension save that the three of us who rotated themselves into it have never returned. And until one of us succeeds in building a neutralizing pattern we can never die—we must face a drab and cheerless eternity of existence as we now are."

"An eternity, yes, but an eternity neither drab nor cheerless. We know but little, as you have said, but in that fact lies a stimulus; we can and shall go on forever, learning more and ever more. Think of it! But hold—what is that? I feel a foreign thought. It must emanate from a mind powerful indeed to have come so far."

"I have felt them. There are four foreign minds, but they are unimportant."

"Have you analyzed them?"

"Yes. They are the people of the space ship which we just mentioned; projecting their mentalities to us here."

"Projecting mentalities? Such a low form of life? They must have learned much from you, Eight."

"Perhaps I did give them one or two hints," Eight returned, utterly indifferent, "but they are of no importance to us."

"I am not so sure of that," One mused. "We found no others in that Galaxy capable of so projecting themselves, nor did we find any beings possessing minds sufficiently strong to be capable of existence without the support of a material body. It may be that they are sufficiently advanced to join us. Even if they are not, if their minds should prove too weak for our company, they are undoubtedly strong enough to be of use in one of my researches."

AT THIS point Seaton cut off the projections and began to muster his sixth-order defenses, therefore he did not "hear" Eight's outburst against the proposal of his leader.

"I will not allow it, One!" the disembodied intelligence protested intensely. "Rather than have you inflict upon them the eternity of life that we have suffered I shall myself dematerialize them. Much as they love life, it would be infinitely better for them to spare a few minutes of it than to live forever."

But there was no reply. One had vanished; had darted at utmost speed toward the *Skylark*. Eight followed him instantly. Light-centuries of distance meant no more to them than to Seaton's own projector, and they soon reached the hurtling space ship; a space ship moving with all its unthinkable velocity, yet to them motionless—what is velocity when there are no reference points by which to measure it?

"Back, Eight!" commanded One abruptly. "They are inclosed in a nullifying wall of the sixth order. They are indeed advanced in mentality."

"A complete stasis in the subether?" Eight marveled. "That will do as well as the pattern——"

"Greetings, strangers!" Seaton's thought interrupted. Thoughts as clear as those require no interpretation of language. "My projection is here, outside the wall, but I might caution you that one touch of your patterns will cut it off and stiffen that wall to absolute impenetrability. I assume that your visit is friendly?"

"Eminently so," replied One. "I offer you the opportunity of joining us; or, at least, the opportunity of being of assistance to science in the attempt at joining us."

"They want us to join them as pure intellectuals, folks." Seaton turned from the projector, toward his friends. "How about it, Dottie? We've got quite a few things to do yet in the flesh, haven't we?"

"I'll say we have, Dickie—don't be an idiot!" She chuckled.

"Sorry, One!" Seaton thought again into space. "Your invitation is appreciated to the full, and we thank you for it, but we have too many things to do in our own lives and upon our own world to accept it at this time. Later on, perhaps, we could do so with profit."

"You will accept it *now*," One declared coldly. "Do you imagine that your puny wills can withstand *mine* for a single instant?"

"I don't know; but, aided by certain mechanical devices of ours, I do know that they'll do a terrific job of trying!" Seaton blazed back.

"There is one thing that I believe you can do," Eight put in. "Your barrier wall should be able to free me from this intolerable condition of eternal life!" And he hurled himself forward

with all his prodigious force against that nullifying wall.

Instantly the screen flamed into incandescence; converters and generators whined and shrieked as hundreds of pounds of power uranium disappeared under that awful load. But the screens held, and in an instant it was over. Eight was gone, disrupted into the future life for which he had so longed, and the impregnable wall was once more merely a tenuous veil of sixth-order vibrations. Through that veil Seaton's projection crept warily; but the inhuman, monstrous mentality poised just beyond it made no demonstration.

"Eight committed suicide, as he has so often tried to do," One commented coldly, "but, after all, his loss will be felt with relief, if at all. His dissatisfaction was an actual impediment to the advancement of our entire group. And now, feeble intellect, I will let you know what is in store for you, before I direct against you forces which will render your screens inoperative and therefore make further interchange of thought impossible. You shall be dematerialized; and, whether your minds are strong enough to exist in the free state, your entities shall be of some small assistance to me before you pass on to the next cycle of existence. What substance do you disintegrate for power?"

"That is none of your business, and since you cannot drive a ray through this screen you will never find out!" Seaton snapped.

"It matters little," One rejoined, unmoved. "Were you employing pure neutronium and were your vessel entirely filled with it, yet in a short time it would be exhausted. For, know you, I have summoned the other members of our group. We are able to direct cosmic forces which, although not infinite in magnitude, are to all intents and purposes inexhaustible. In a brief

time your power will be gone, and I shall then confer with you again."

THE OTHER mentalities flashed up in response to the call of their leader, and at his direction arranged themselves all about the far-flung outer screen of the *Skylark*. Then from all space, directed inward, there converged upon the space ship gigantic streamers of force. Invisible streamers, and impalpable, but under their fierce impacts the defensive screens of the Terrestrial vessel flared into even more frenzied displays of pyrotechnic incandescence than they had exhibited under the heaviest beams of the superdreadnought of the Fenachrone. For thousands of miles space became filled with coruscantly luminous discharges as the uranium-driven screens of the *Skylark* dissipated the awful force of the attack.

"I don't see how they can keep that up for very long." Seaton frowned as he read his meters and saw at what an appalling rate their store of metal was decreasing. "But he talked as though he knew his stuff. I wonder if—um—um——" He fell silent, thinking intently, while the others watched his face in strained attention; then went on: "Uh-huh, I see—he *can* do it—he wasn't kidding us."

"How?" asked Crane tensely.

"But how can he, possibly, Dick?" cried Dorothy. "Why, they aren't *anything*, really!"

"They can't store up power in themselves, of course, but we know that all space is pervaded by radiation—theoretically a source of power that outclasses us as much as we outclass mule power. Nobody that I know of ever tapped it before, and I can't tap it yet; but they've tapped it and can direct it. The directing is easy enough to understand—just like a kid shooting a high-power rifle. He doesn't have to furnish energy for the bullet, you know—

he merely touches off the powder and tells the bullet where to go.

"But we're not quite sunk yet. I see one chance; and even though it's pretty slim, I'd take it before I would knuckle down to his nibs out there. Eight said something a while ago, remember, about 'rotating' into the fourth dimension? I've been mulling the idea around in my mind. I'd say that as a last resort we might give it a whirl and take a chance on coming through. See anything else that looks at all feasible, Mart?"

"Not at the present moment," Crane replied calmly. "How much time have we?"

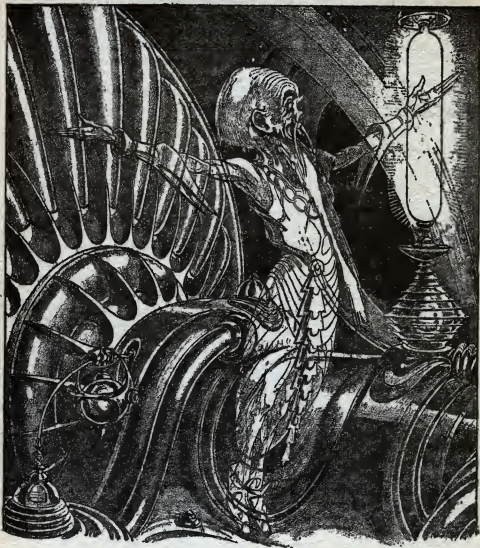
"About forty hours at the present rate of dissipation. It's constant, so they've probably focused everything they can bring to bear on us."

"You cannot attack them in any way? Apparently the sixth-order zone of force kills them?"

"Not a chance. If I open a slit one kilocycle wide anywhere in the band they'll find it instantly and it'll be curtains for us. And even if I could fight them off and work through that slit I couldn't drive a zone into them—their velocity is the same as that of the zone, you know, and they'd simply bounce back with it. If I could pen them up into a spherical—um—um—no use, can't do it with this equipment. If we had Rovol and Caslor and a few others of the Firsts of Norlamin here, and had a month or so of time, maybe we could work out something, but I couldn't even start it alone in the time we've got."

"But even if we decide to try the fourth dimension, how could you do it? Surely that dimension is merely a mathematical concept, with no actual existence in nature?"

"No; it's actual enough, I think—nature's a big field, you know, and contains a lot of unexplored territory. Remember how casually that Eight thing out there discussed it? It isn't how to



"I welcome you to Norlamin, Terrestrials," spoke the projection. "I suppose that you are close friends of Seaton and Crane, and that you come to learn why they have not communicated with you?"

get there that's biting me; it's only that those intellectuals can stand a lot more grief than we can, and conditions in the region of the fourth dimension probably wouldn't suit us any too well.

"However, we wouldn't have to be there for more than a hundred thousandth of a second to dodge this gang, and we could stand almost anything

that long, I imagine. As to how to do it—rotation. Three pairs of rotating, high-amperage currents, at mutual right angles, converging upon a point. Remembering that any rotating current exerts its force at a right angle, what would happen?"

"It might, at that," Crane conceded, after minutes of narrow-eyed concen-



Self-contained as DuQuesne was, this statement almost took his breath away, squaring almost perfectly as it did with the tale he had so carefully prepared.

tration; then, Crane-wise, began to muster objections. "But it would not so affect this vessel. She is altogether too large, is of the wrong shape, and——"

"And you can't pull yourself up by your own boot straps," Seaton interrupted. "Right—you've got to have something to work from, something to anchor your forces to. We'd make the

trip in little old *Skylark Two*. She's small, she's spherical, and she has so little mass compared to *Three* that rotating her out of space would be a lead-pipe cinch—it wouldn't even shift *Three's* reference planes."

"It might prove successful," Crane admitted at last, "and, if so, it could not help but be a very interesting and

highly informative experience. However, the chance of success seems to be none too great, as you have said, and we must exhaust every other possibility before we decide to attempt it."

FOR HOURS then the two scientists went over every detail of their situation, but could evolve no other plan which held out even the slightest gleam of hope for a successful outcome; and Seaton seated himself before the banked and tiered keyboards of his projector.

There he worked for perhaps half an hour, then called to Crane: "I've got everything set to spin *Two* out to where we're going, Mart. Now if you and Shiro"—for Crane's former "man" and the *Skylark's* factotum was now quite as thoroughly familiar with Norlaminian forces as he had formerly been with Terrestrial tools—"will put some forces onto the job of getting her ready for anything you think we may meet up with, I'll put in the rest of the time trying to figure out a way of taking a good stiff poke at those jaspers out there."

He knew that the zones of force surrounding his vessel were absolutely impenetrable to any wave propagated through the ether, and to any possible form of material substance. He knew also that the subether was blocked, through the fifth and sixth orders. He knew that it was hopeless to attempt to solve the problem of the seventh order in the time at his disposal.

If he were to open any of his zones, even for an instant, in order to launch a direct attack, he knew that the immense mentalities to which he was opposed would perceive the opening and through it would wreak the Terrestrials' dematerialization before he could send out a single beam.

Last and worst, he knew that not even his vast console afforded any combination of forces which could possi-

bly destroy the besieging intellectuals. What *could* he do?

For hours he labored with all the power of his wonderful brain, now stored with all the accumulated knowledge of thousands upon thousands of years of Norlaminian research. He stopped occasionally to eat, and once, at his wife's insistence, he snatched a little troubled and uneasy sleep; but his mind drove him back to his board and at that board he worked. Worked—while the hands of the chronometer approached more and ever more nearly the zero hour. Worked—while the *Skylark's* immense stores of uranium dwindled visibly away in the giving up of their inconceivable amounts of intra-atomic energy to brace the screens which were dissipating the inexhaustible flood of cosmic force being directed against them. Worked—in vain. At last he glanced at the chronometer and stood up. "Twenty minutes now—time to go," he announced. "Dot, come here a minute!"

"Sweetheart!" Tall though Dorothy was, the top of her auburn head came scarcely higher than Seaton's chin. Tightly but tenderly held in his mighty arms she tipped her head back, and her violet eyes held no trace of fear as they met his. "It's all right, lover. I don't know whether it's because I think we're going to get away, or because we're together; but I'm not the least bit afraid of whatever it is that's going to happen to us."

"Neither am I, dear. Some way, I simply can't believe that we're passing out; I've got a hunch that we're going to come through. We've got a lot to live for yet, you and I, together. But I want to tell you what you already know—that, whatever happens, I love you."

"Hurry it up, Seatons!"

Margaret's voice recalled them to reality, and all five were wafted upon beams of force into the spherical launch-

ing space of the craft in which they were to venture into the unknown.

That vessel was *Skylark Two*, the forty-foot globe of arenak which from Earth to Norlamin had served them so well and which had been carried, life-boatlike, well inside the two-mile-long torpedo which was *Skylark Three*. The massive doors were clamped and sealed, and the five human beings strapped themselves into their seats against they knew not what emergency.

"All ready, folks?" Seaton grasped the ebonite handle of his master switch. "I'm not going to tell you Cranes good-by, Mart—you know my hunch. You got one, too?"

"I cannot say that I have. However, I have always had a great deal of confidence in your ability. Then, too, I have always been something of a fatalist; and, most important of all, like you and Dorothy, Margaret and I are together. You may start any time now, Dick."

"All right—hang on. On your marks! Get set! Go!"

As the master switch was thrown a set of gigantic plungers drove home, actuating the tremendous generators in the holds of the massive cruiser of space above and around them; generators which, bursting into instantaneous and furious activity, directed upon the spherical hull of their vessel three opposed pairs of currents of electricity; madly spinning currents, of a potential and of a density never before brought into being by human devices.

VII.

DuQUESNE DID NOT find Seaton, nor did he quite comb the Galaxy star by star, as he had declared that he would do in that event. He did, however, try; he prolonged the vain search to distances of so many light-years and through so many weeks of time that

even the usually complacent Loring was moved to protest.

"Pretty much like hunting the proverbial needle in the haystack, isn't it, chief?" that worthy asked at last. "They could be clear back home by this time, whoever they are. It looks as though maybe we could do ourselves more good by doing something else."

"Yes; I probably am wasting time now, but I hate to give it up," the scientist replied. "We have pretty well covered this section of the Galaxy. I wonder if it really was Seaton, after all? If he could blow up that planet through those screens he must have a lot more stuff than I have ever thought possible—certainly a lot more than I have, even now—and I would like very much to know how he did it. I couldn't have done it, nor could the Fenachrone, and if he did it without coming closer to it than a thousand light-years——"

"He may have been a lot closer than that," Loring interrupted. "He has had lots of time to make his get-away, you know."

"Not so much as you think, unless he has an acceleration of the same order of magnitude as ours, which I doubt," DuQuesne countered. "Although it is of course possible, in the light of what we know must have happened, that he may have an acceleration as large as ours, or even larger. But the most vital question now is, where did he get his dope? We'll have to consider the probabilities and make our own plans accordingly."

"All right! That's your dish—you're the doctor."

"We shall have to assume that it was Seaton who did it, because if it was any one else, we have nothing whatever to work on. Assuming Seaton, we have four very definite leads. Our first lead is that it must have been Seaton in the *Skylark* and Dunark in the *Kondal* that destroyed the Fenachrone ship from the

wreck of which he rescued the engineer. I couldn't learn anything about the actual battle from his brains, since he didn't know much except that it was a zone of force that did the real damage, and that the two strange ships were small and spherical.

"The *Skylark* and the *Kondal* answer that description and, while the evidence is far from conclusive, we shall assume as a working hypothesis that the *Skylark* and the *Kondal* did in fact attack and cut up a Fenachrone battleship fully as powerful as the one we are now in. That, as I do not have to tell you, is a disquieting thought.

"If it is true, however, Seaton must have left the Earth shortly after we did. That idea squares up, because he could very well have had an object-compass on me—whose tracer, by the way, would have been cut by the Fenachrone screens, so we needn't worry about it, even if he did have it once.

"Our second lead lies in the fact that he must have got the dope on the zone of force sometime between the time when we left the Earth and the time when he cut up the battleship. He either worked it out himself on Earth, got it en route, or else got it on Osnome, or at least somewhere in the Green System. If my theory is correct, he worked it out by himself, before he left the Earth. He certainly did not get it on Osnome, because they did not have it.

"The third lead is the shortness of the period of time that elapsed between his battle with the Fenachrone warship and the destruction of their planet.

"The fourth lead is the great advancement in ability shown; going as he did from the use of a zone of force as an offensive weapon, up to the use of some weapon as yet unknown to us that works *through* defensive screens fully as powerful as any possible zone of force.

"Now, from the above hypotheses, we

are justified in concluding that Seaton succeeded in enlisting the help of some ultrapowerful allies in the Green System, on some planet other than Osnome——"

"Why? I don't quite follow you there," put in Loring.

"He didn't have this new stuff, whatever it is, when he met the battleship, or he would have used it instead of the dangerous, almost hand-to-hand fighting entailed by the use of a zone of force," DuQuesne declared flatly. "Therefore he got it some time after that, but before the big explosion; and you can take it from me that no one man worked out a thing that big in such a short space of time. It can't be done. He had help, and high-class help at that.

"The time factor is also an argument in favor of the idea that he got it somewhere in the Green System—he didn't have time to go anywhere else. Also, the logical thing for him to do would be to explore the Green System first, since it has a very large number of planets, many of which undoubtedly are inhabited by highly advanced races. Does that make it clearer?"

"I've got it straight so far," assented the aid.

"WE MUST plan our course of action in detail before we leave this spot," DuQuesne decided. "Then we will be ready to start back for the Green System, to find out who Seaton's friends were and to persuade them to give us all the dope they gave him. Now pin your ears back and listen to this, every word of it.

"We are not nearly as ready nor as well equipped as I thought we were—Seaton is about three laps ahead of us yet. Also, there is a lot more to psychology than I ever thought there was before I read those brains back there. Both of us had better get in training mentally to meet Seaton's

friends, whoever they may be, or else we probably will not be able to get away with a thing.

"Both of us, you especially, want to clear our minds of every thought inimical to Seaton in any way or in even the slightest degree. You and I are, and always have been, two of the best friends Seaton ever had on Earth—or anywhere else, for that matter. And of course I cannot be Marc DuQuesne, for reasons that are self-evident. From now on I am Stewart Vaneman, Dorothy's brother— No; forget all that—too dangerous. They may know all about Seaton's friends and Mrs. Seaton's family. Our best line is to be humble cogs in Seaton's great machine. We worship him from afar as the world's greatest hero, but we are not of sufficient importance for him to know personally."

"Isn't that carrying caution to extremes?"

"It is not. The only thing that we are certain of concerning these postulated beings is that they know immensely more than we do; therefore our story cannot have even the slightest flaw in it—it must be bottle-tight. So I will be Stewart Donovan—fortunately I haven't my name, initials, or monogram on anything I own—and I am one of the engineers of the Seaton-Crane Co., working on the power-plant installation.

"Seaton may have given them a mental picture of DuQuesne, but I will grow a mustache and beard, and with this story they will never think of connecting Donovan with DuQuesne. You can keep your own name, since neither Seaton nor any of his crowd ever saw or heard of you. You are also an engineer—my technical assistant at the works—and my buddy.

"We struck some highly technical stuff that nobody but Seaton could handle, and nobody had heard anything from him for a long time, so we came

out to hunt him up and ask him some questions. You and I came together because we are just like Damon and Pythias. That story will hold water, I believe—do you see any flaws in it?"

"Perhaps not flaws, but one or two things you forgot to mention. How about this ship? I suppose you could call her an improved model, but suppose they are familiar with Fenachrone space-ship construction?"

"We shall not be in this ship. If, as we are assuming, Seaton and his new friends were the star actors in the late drama, those friends certainly have mentalities and apparatus of high caliber and they would equally certainly recognize this vessel. I had that in mind when I shoved the *Violet* off."

"Then you will have the *Violet* to explain—an Osnomian ship. However, the company could have imported a few of them, for runabout work, since Seaton left. It would be quicker than building them, at that, since they already have all the special tools and stuff on Osnome."

"You're getting the idea. Anything else?"

"All this is built around the supposition that he will not be there when we arrive. Suppose he is there?"

"The chances are a thousand to one that he will be gone somewhere, exploring—he never did like to stick around in any one place. And even in the remote possibility that he should be on the planet, he certainly will not be at the dock when we land, so the story is still good. If he should be there, we shall simply have to arrange matters so that our meeting him face to face is delayed until after we have got what we want; that's all."

"All right; I've got it down solid."

"Be sure that you have. Above all, remember the mental attitude toward Seaton—hero worship. He is not only the greatest man that Earth ever produced; he is the king-pin of the entire

Galaxy, and we rate him just a hair below the Almighty. Think that thought with every cell of your brain. Concentrate on it with all your mind. Feel it—act it—really believe it until I tell you to quit.”

“I’ll do that. Now what?”

“Now we hunt up the *Violet*, transfer to her, and set this cruiser adrift on a course toward Earth. And while I think of it, we want to be sure not to use any more power than the *Skylark* could, anywhere near the Green System, and cover up anything that looks peculiar about the power plant. We’re not supposed to know anything about the five-light drive of the Fenachrone, you know.”

“But suppose that you can’t find the *Violet*, or that she has been destroyed?”

“In that case we’ll go to Osnome and steal another one just like her. But I’ll find her—I know her exact course and velocity, we have ultrarange detectors, and her automatic instruments and machinery make her destructionproof.”

DuQUESNE’S chronometers were accurate, his computations were sound, and his detectors were sensitive enough to have revealed the presence of a smaller body than the *Violet* at a distance vastly greater than the few millions of miles which constituted the unavoidable error. Therefore the Osno-mian cruiser was found without trouble and the transfer was effected without untoward incident.

Then for days the *Violet* was hurled at full acceleration toward the center of the Galaxy. Long before the Green System was reached, however, the globular cruiser was swung off her course and, mad acceleration reversed, was put into a great circle, so that she would approach her destination from the direction of our own solar system. Slower and slower she drove onward, the bright green star about which she

was circling resolving itself first into a group of bright-green points and finally into widely spaced, tiny green suns.

Although facing the completely unknown and about to do battle, with their wits certainly, and with their every weapon possibly, against overwhelming odds, neither man showed or felt either nervousness or disorganization. Loring was a fatalist. It was DuQuesne’s party; he was merely the hired help. He would do his best when the time came to do something; until that time came there was nothing to worry about.

DuQuesne, on the other hand, was the repose of conscious power. He had laid his plans as best he could with the information then at hand. If conditions changed he would change those plans; otherwise he would drive through with them ruthlessly, as was his wont. In the meantime he awaited he knew not what, poised, cool, and confident.

Since both men were really expecting the unexpected, neither betrayed surprise when something that was apparently a man materialized before them in the air of the control room. His skin was green, as was that of all the inhabitants of the Green System. He was tall and well-proportioned, according to Earthly standards, except for his head, which was overlarge and particularly massive above the eyes and backward from the ears. He was evidently of advanced years, for his face was seamed and wrinkled, and both his long, heavy hair and his yard-long, square-cut beard were a snowy white, only faintly tinged with green.

The Norlaminian projection thickened instantly, with none of the oscillation and “hunting” which had been so noticeable in the one which had visited *Skylark Two* a few months earlier, for at that comparatively short range the fifth-order keyboard handling it could hold a point, however moving, as accurately as a Terrestrial photographic telescope holds a star. And in the moment:

of materialization of his projection the aged Norlaminian spoke.

"I welcome you to Norlamin, Terrestrials," he greeted the two marauders with the untroubled serenity and calm courtesy of his race. "Since you are quite evidently of the same racial stock as our very good friends the doctors Seaton and Crane, and since you are traveling in a ship built by the Osnomi-ans, I assume that you speak and understand the English language which I am employing. I suppose that you are close friends of Seaton and Crane and that you have come to learn why they have not communicated with you of late?"

SELF-CONTAINED as DuQuesne was, this statement almost took his breath away, squaring almost perfectly as it did with the tale he had so carefully prepped. He did not show his amazed gratification, however, but spoke as gravely and as courteously as the other had done:

"We are very glad indeed to see you, sir; particularly since we know neither the name nor the location of the planet for which we are searching. Your assumptions are correct in every particular save one——"

"You do not know even the name of Norlamin?" the Green scientist interrupted. "How can that be? Did not Dr. Seaton send the projections of all his party to you upon Earth, and did he not discuss matters with you?"

"I was about to explain that." DuQuesne lied instantly, boldly, and convincingly. "We heard that he had sent a talking, three-dimensional picture of his group to Earth, but after it had vanished all the real information that any one seemed to have obtained was that they were here in the Green System somewhere, but not upon Osnome, and that they had been taught much of science. Mrs. Seaton did most of the talk-

ing, I gather, which may account for the dearth of pertinent details.

"Neither my friend Loring, here, nor I—I am Stewart Donovan, by the way—saw the picture, or rather, projection. You assumed that we are Seaton's close friends. We are engineers in his company, but we have not the honor of his personal acquaintance. His scientific knowledge was needed so urgently that it was decided that we should come out here after him, since the chief of construction had heard nothing from him for so long."

"I see." A shadow passed over the seamed green face. "I am very sorry indeed at what I have to tell you. We did not report anything of it to Earth because of the panic that would have ensued. We shall of course send the whole story as soon as we can learn what actually did take place and can deduce therefrom the probable sequence of events yet to occur."

"What's that—an accident? Something happened to Seaton?" DuQuesne snapped. His heart leaped in joy and relief, but his face showed only strained anxiety and deep concern. "He isn't here now? Surely nothing serious could have happened to him."

"Alas, young friend, none of us knows yet what really occurred. It is highly probable, however, that their vessel was destroyed in intergalactic space by forces about which we have as yet been able to learn nothing; forces directed by some intelligence as yet to us unknown. There is a possibility that Seaton and his companions escaped in the vessel you knew as *Skylark Two*, but so far we have not been able to find them.

"But enough of talking; you are strained and weary and you must rest. As soon as your vessel was detected the beam was transferred to me—the student Rovol, perhaps the closest to Seaton of any of my race—so that I could give you this assurance. With your

permission I shall direct upon your controls certain forces which shall so govern your flight that you shall alight safely upon the grounds of my laboratory in a few minutes more than twelve hours of your time, without any further attention or effort upon your part.

"Further explanations can wait until we meet in the flesh. Until that time, my friends, do nothing save rest. Eat and sleep without care or fear, for your flight and your landing shall be controlled with precision. Farewell!"

The projection vanished instantaneously, and Loring expelled his pent-up breath in an explosive sigh.

"Whew! But what a break, chief, what a——"

He was interrupted by DuQuesne, who spoke calmly and quietly, yet insistently: "Yes, it is a singularly fortunate circumstance that the Norlaminians detected us and recognized us; it probably would have required weeks for us to have found their planet unaided." DuQuesne's lightning mind found a way of covering up his companion's betraying exclamation and sought some way of warning him that could not be overheard. "Our visitor was right in saying that we need food and rest badly, but before we eat let us put on the headsets and bring the record of our flight up to date—it will take only a minute or two."

"What's biting you, chief?" thought Loring as soon as the power was on. "We didn't have any——"

"Plenty!" DuQuesne interrupted him viciously. "Don't you realize that they can probably hear every word we say, and that they can see every move we make, even in the dark? In fact, they may be able to read thoughts, for all I know; so *think straight* from now on, if you never did before! Now let's finish up this record."

He then impressed upon a tape the record of everything that had just happened. They ate. Then they slept

soundly—the first really untroubled sleep they had enjoyed for weeks. And at last, exactly as the projection had foretold, the *Violet* landed without a jar upon the spacious grounds beside the laboratory of Rovol, the foremost physicist of Norlamin.

WHEN the door of the space ship opened, Rovol in person was standing before it, waiting to welcome the voyagers and to escort them to his dwelling. But DuQuesne, pretending a vast impatience, would not be dissuaded from the object of his search merely to satisfy the Norlaminian amenities of hospitality and courtesy. He poured forth his prepared story in a breath, concluding with a flat demand that Rovol tell him everything he knew about Seaton, and that he tell it at once.

"It would take far too long to tell you anything in words," the ancient scientist replied placidly. "In the laboratory, however, I can and will inform you fully in a few minutes concerning everything that has happened."

Utter stranger himself to deception in any form, as was his whole race, Rovol was easily and completely deceived by the consummate acting, both physical and mental, of DuQuesne and Loring. Therefore, as soon as the three had donned the headsets of the wonderfully efficient Norlaminian educator, Rovol gave to the Terrestrial adventurers without reserve his every mental image and his every stored fact concerning Seaton and his supposedly ill-fated last voyage.

Even more clearly than as if he himself had seen them all happen, DuQuesne beheld and understood Seaton's visit to Norlamin, the story of the Fenachrone peril, the building of the fifth-order projector, the demolition of Fenor's space fleet, the revenge-purposed flight of Ravindau the scientist, and the complete volatilization of the Fenachrone planet.

He saw Seaton's gigantic space cruiser *Skylark Three* come into being and, uranium-driven, speed out into the awesome void of intergalactic space in pursuit of the last survivors of the Fenachrone race. He watched the mighty *Three* overtake the fleeing vessel, and understood every detail of the epic engagement that ensued, clear to its cataclysmic end. He watched the victorious battleship speed on and on, deeper and deeper into the intergalactic void, until she began to approach the limiting range of even the stupendous fifty-order projector by means of which he knew the watching had been done.

Then, at the tantalizing limit of visibility, something began to happen; something at the very incomprehensibility of which DuQuesne strained both mind and eye, exactly as had Rovol when it had taken place so long before. The immense bulk of the *Skylark* disappeared behind zone after impenetrable zone of force, and it became increasingly evident that from behind those supposedly impervious and impregnable shields Seaton was waging a terrific battle against some unknown opponent, some foe invisible even to fifth-order vision.

For nothing was visible—nothing, that is, save the released energies which, leaping through level after level, reached at last even to the visible spectrum. Yet forces of such unthinkable magnitude were warring there that space itself was being deformed visibly, moment by moment. For a long time the space strains grew more and more intense, then they disappeared instantly. Simultaneously the *Skylark's* screens of force went down and she was for an instant starkly visible before she exploded into a vast ball of appallingly radiant, flaming vapor.

IN THAT instant of clear visibility, however, Rovol's mighty mind had photographed every salient visible feature

of the great cruiser of the void. Being almost at the limit of range of the projector, details were of course none too plain; but certain things were evident. The human beings were no longer aboard; the little lifeboat that was *Skylark Two* was no longer in her spherical berth; and there were unmistakable signs of a purposeful and deliberate departure.

"And," Rovol spoke aloud as he removed the headset, "although we searched minutely and most carefully all the surrounding space we could find nothing tangible. From these observations it is all too plain that Seaton was attacked by some intelligence wielding dirigible forces of the sixth order; that he was able to set up a defensive pattern; that his supply of power uranium was insufficient to cope with the attacking forces; and that he took the last desperate means of escaping from his foes by rotating *Skylark Two* into the unknown region of the fourth dimension."

DuQuesne's stunned mind groped for a moment in an amazement akin to stupefaction, but he recovered quickly and decided upon his course.

"Well, what are you doing about it?" he snapped.

"We have done and are doing everything possible for us, in our present state of knowledge and advancement, to do," Rovol replied placidly. "We sent out forces, as I told you, which obtained and recorded all the phenomena to which they were sensitive. It is true that a great deal of data escaped them, because the primary impulses originated in a level beyond our present knowledge, but the fact that we cannot understand it has only intensified our interest in the problem. It shall be solved. After its solution we shall know what steps to take and those steps shall then be taken."

"Have you any idea how long it will take to solve the problem?"

"Not the slightest. Perhaps one lifetime, perhaps many—who knows? However, rest assured that it shall be solved, and that the condition shall be dealt with in the manner which shall best serve the interest of humanity as a whole."

"But good heavens!" exclaimed DuQuesne. "In the meantime, what of Seaton and Crane?" He was now speaking his true thoughts. Upon this, his first encounter, he could in nowise understand the deep, calm, timeless trend of mind of the Norlaminians; not even dimly could he grasp or appreciate the seemingly slow but inexorably certain method in which they pursued relentlessly any given line of research to its ultimate conclusion.

"If it should be graven upon the sphere that they shall pass they may—and will—pass in all tranquility, for they know full well that it was not in idle gesture that the massed intellect of Norlamin assured them that their passing should not be in vain. You, however, youths of an unusually youthful and turbulent race, could not be expected to view the passing of such a one as Seaton from our own mature viewpoint."

"I'll tell the universe that I don't look at things the way you do!" barked DuQuesne scathingly. "When I go back to Earth—if I go—I shall at least have tried. I've got a life-sized picture of myself standing idly by while some one else tries for seven hundred years to decipher the indecipherable!"

"There speaks the impetuosity of youth," the old man chided. "I have told you that we have proved that at present we can do nothing whatever for the occupants of *Skylark Two*. Be warned, my rash young friend; do not tamper with powers entirely beyond your comprehension."

"Warning be damned!" DuQuesne snorted. "We're shoving off. Come on, Loring—the quicker we get started

the better our chance of getting something done. You'll be willing to give me the exact bearing and the distance, won't you, Rovol?"

"We shall do more than that, son," the Green patriarch replied, while a shadow came over his wrinkled visage. "Your life is your own, to do with as you see fit. You have chosen to go in search of your friends, scorning the odds against you. But before I tell you what I have in mind, I must try once more to make you see that the courage which dictates the useless sacrifice of a life ceases to be courage at all, but becomes sheerest folly.

"Since we have had sufficient power several of our youths have been studying the fourth dimension. They rotated many inanimate objects into that region, but could recover none of them. Instead of waiting until they had derived the fundamental equations governing such phenomena they rashly visited that region in person, in a vain attempt to achieve a short cut to knowledge. Not one of them has come back.

"Now I declare to you in all solemnity that the quest you wish to undertake, involving as it does not only that entirely unknown region but also the equally unknown sixth order of vibrations, is to you at present utterly impossible. Do you still insist upon going?"

"We certainly do. You may as well save your breath."

"Very well; so be it. Frankly, I had but little hope of swerving you from your purpose by reason. But before you go we shall supply you with every resource at our command which may in any way operate to increase your infinitesimal chance of success. We shall build for you a duplicate of Seaton's own *Skylark Three*, equipped with every device known to our science, and we shall instruct you fully in the use of those devices before you set out."

"But the time——" DuQuesne began to object.

"A matter of hours only," Rovol silenced him. "True, it took us some little time to build *Skylark Three*, but that was because it had not been done before. Every force employed in her construction was of course recorded, and to reproduce her in every detail, without attention or supervision, it is necessary only to thread this tape, thus, into the integrator of my master keyboard. The actual construction will of course take place in the area of experiment, but you may watch it, if you wish, in this visiplate. I must make a short series of observations at this time. I will return in ample time to instruct you in the operation of the vessel and of everything in it."

In stunned amazement the two men stared into the visiplate, so engrossed in what they saw there that they scarcely noticed the departure of the aged scientist. For before their eyes there had already sprung into being an enormous structure of laced and latticed members of purple metal, stretching over two miles of level plain. While it was very narrow for its length, yet its fifteen hundred feet of diameter dwarfed into insignificance the many outlandish struc-

tures near by, and under their staring eyes the vessel continued to take form with unbelievable rapidity. Gigantic girders appeared in place as though by magic; skin after skin of thick, purple inoson was welded on; all without the touch of a hand, without the thought of a brain, without the application of any visible force.

"Now you can say it, Doll; there's no spy ray on us here. What a break—what a break!" exulted DuQuesne. "The old fossil swallowed it bodily, hook, line, and sinker!"

"It may not be so good, though, at that, chief, in one way. He's going to watch us, to help us out if we get into a jam, and with that infernal telescope, or whatever it is, the Earth is right under his nose."

"Simpler than taking milk away from a blind kitten," the saturnine chemist gloated. "We'll go out to where Seaton went, only farther—out beyond the reach of his projector. There, completely out of touch with him, we'll circle around the Galaxy back to Earth and do our stuff. Easier than dynamiting fish in a bucket—the old sap's handing me everything I want, right on a silver platter!"

To be continued.

COSMIC RHYTHM

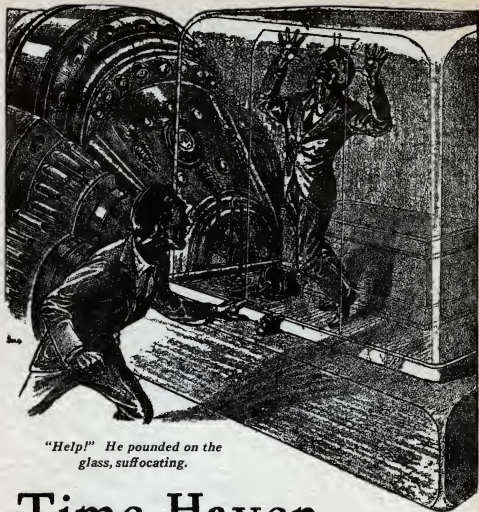
by HARL VINCENT

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OCTOBER ASTOUNDING STORIES

in advance!



*"Help!" He pounded on the
glass, suffocating.*

Time Haven

by Howard W. Graham, Ph. D.

Illustrated by Elliot Dold

A CATACLYSM of broken light burst on him; he heard the avalanchian thunders of the measured centuries, shuddered, opened his eyes. A moment since, his hands had rested on the dials of the machine. The headgear, with its bare electrodes clasped to his throat, was fastened snugly to his skull. As far as Vincent

knew, he had merely blinked his eyes, but in that instant the phenomenon had occurred. He was no longer at the machine, and its drumming whine had stopped.

What he could see of the laboratory from his position was about the same. He wore the helmet still, but he was isolated from the apparatus and the

switch panel by a plate-glass case. The helmet's terminals were still fixed to the apparatus, running through a small hole bored in the glass. Vincent realized that he was lying supine on a low dais-like table and that he was supremely uncomfortable. The dais, in turn, was supported by a broad stone shelf on which the glass canopy rested. Vincent staggered to his feet, stripping off the helmet. He felt weak, ragged.

"Help!"

He pounded on the glass, suffocating. A slim, eagle-faced man, a total stranger, stood in the room looking out of the tall windows. He heard the dull sound of drumming fists and turned.

"Ah!" he said, without any show of surprise.

He approached at a short, smart walk, and placing his hands flat against the end of the case caused the panel to slip down flush with the floor. Air rushed in.

"Come!" He offered Vincent his hand and escorted him to a low, soft lounge against the wall.

"How do you feel now? Better?"

He was solicitous and deftly competent. Vincent had the heels of his palms pressed to his pounding temples. He looked up into staccato black eyes.

"Tell me how you feel," the stranger insisted.

"Who the devil are you?" Vincent demanded. "I don't know you; what are you doing here?"

Without answering, the slight, dark man rose and left the room; he reappeared in a moment with a glass of brandy. Vincent choked on a full swallow of it.

"Easy," said the stranger. "I cannot tell you how pleased I am that this thing has occurred in my own lifetime, my tenure of office. I am Hayden Cope, your director."

"Director?" Vincent gave Cope a blank stare of distrust.

"Of course you wouldn't know. Di-

rector of the Merryfield Tower and your interests." The last two words were given heavy emphasis.

His mind still sluggish from its long disuse, Vincent was surprised by Cope's following question.

"By the way, did you ever see your grandmother, the founder?"

"Why, no; I didn't." Vincent was puzzled. "She died before I was born."

"No pictures, no descriptions in writing? Letters, perhaps?" Cope insisted.

Vincent shook his head.

"That's very unfortunate, the greatest woman of all time, and we haven't the slightest idea of what she looked like." Cope sat on the lounge, attentively curious, while the inevitable question formed in Vincent's mind.

"What year is this?"

"I have been waiting for you to ask that." Cope smiled. "2443; your count."

"Then it worked! The apparatus there—knocked me out."

"Yes."

Cope took Vincent's arm and led him to the windows, which he pushed outward. The two stepped out onto a gallery. Vincent rested his hands on the balustrade and looked down in awe. From this gallery one commanded a view of the entire city.

It was a clear, mistless day, and Vincent could see far out across the open water of the ocean. As far as he could determine, sweeping his eyes, dumfounded, over the panorama of the city beneath him, New York consisted of one building alone, and that was the building in which he was standing.

This building was the Merryfield Tower. In 1936 his laboratory had been established on the second floor. It had been moved, with every detail of furnishing, eight-hundred-odd stories up. He judged the height of the gallery to be approximately two miles. Turning his eyes upward, he saw that

the tower continued higher till it blurred in dimness in the wilderness of blue sky.

"Good Heaven!" he ejaculated.

Cope laughed and answered an unspoken query: "Thirty-six thousand, nine hundred and eighty-three feet and a few inches. There is some expansion and contraction according to weather. The Merryfield Corporation!" Cope seemed vastly entertained.

LIKE a stone octopus, the tower had devoured Manhattan and the boroughs surrounding. Other skyscrapers were lost in the strangle of architecture far below. The rivers were canopied with stone. Vincent watched an ocean liner approach the stone margin down the harbor and disappear; all ships with piers in both rivers entered through tunnels of masonry that had long since flooded over them. Babel!

The colossal tower was supported with flying buttress-viaducts, aerial highways that provided direct approach to the tower up to a few stories below. Broad, soaring entablatures with their colonnades of inhabited stone crawled with traffic, vehicular and otherwise; the terminals of several buttresses were sunk with a display of loading stages in the sea itself. The Merryfield Tower stood gigantic over Manhattan like a grotesque, incredible screw pine that man had built in steel and masonry. The sounds of machinery, of life and movement below, rushed up like interminable waterfalls.

Down the gallery a girl emerged from the tower and stepped to an aperture in the balustrade. She wore a thick jacket and carried a light machine on her shoulders. She poised there for a moment searching below for a destination, then stepped off the gallery and fell like a stone, her garments whipping.

"Don't be alarmed," murmured Cope at Vincent's cry of warning. He shivered a little in the brisk, thin air, un-

hooked a machine from the wall. It was much similar to the one worn by the girl. "Elevators are impracticable at this height and would waste priceless floor space as well; these portable affairs are used instead. They are quite simple to use, and light, as you see. If you care to have an instructor sent up? Do you want to go below, visit the upper stories?"

Vincent shook his head, but examined the machine with interest. It had a small, powerful battery of some kind inclosed in an aluminum dome on top. The rest of the machine was cylindrical in form and consisted of a series of nine or ten thick metal disks or plates which were separated from each other by cores of fine wire. The cylinder was something over a foot in height and was perforated at the bottom, sieve-like.

Cope explained that the motive principle was a form of energy known as black light which was released through the holes as the operator willed. The black light might be obtained either by condensing cosmic rays or by filtering sunlight, in which it occurred, and storing it in batteries.

"You see, it is really more simple in operation than the gasoline engine," Cope explained.

A single row of perforations lined the sides of the case for horizontal motion, while a gyroscope principle kept the operator always perpendicular. Motion was possible in two directions only and in revolving, the machine being fixed according to law as protection against accidents. The apparatus was controlled by a button nest that hung over the shoulder by a cord, that fitted nicely into the palm of the hand. The whole mechanism was fitted snugly into a stout, reasonably comfortable canvas jacket that could be worn by any operator of average build.

"I suppose you have no orders yet," Cope remarked. "You own all this, you

know." The sweep of his hand included the entire city, the world.

Vincent stared while Cope patiently shook with cold.

"Richard, the last of the Merryfield line, died a hundred and thirty years ago. You are Vincent Merryfield, aren't you?"

"Of course. Yes. But after all, I——"

"Don't you know what your grandmother, Hattie Merryfield, did back there in the twentieth century? Don't you realize the position you occupy?"

They returned to Vincent's chambers. Cope closed the windows with relief.

"My father—I——" Vincent faltered with embarrassment.

Cope gave him a keen, probing look, burst out laughing. He restored warmth to his slim white hands with a brisk rubbing as he chuckled discreetly.

"What irony!" he exclaimed. "Of course you wouldn't know."

His respect was shaded with mockery as he went on to explain what every one in the world knew but Vincent himself. Cope was a sardonic person after his fashion.

Hattie Merryfield, sound in mind and body but at the point of death through age, made a singular bequest to her wayward son Quinn in a last will and testament. It was in the 1930's, in spring. A good time to die. The Merryfields had been a powerful social and business family, a money-hungry clan save for occasional freaks like Quinn, who was a fair lad interested in architecture. These black Merryfields were called "aliens" in the family.

To Hattie herself, any vocation outside pure business was forthright insanity; she believed piously that Quinn Merryfield was consigned to ignominy as an architect. She made no bones, either, about prophesying broadcast extravagances if the Merryfield coffers were willed to him in toto. To insure the fortune from pillage and Quinn

against shame, Hattie devised an ingenious scheme that was as sound as it was inspired.

IN THE upper Thirties of Manhattan, Hattie purchased six full city blocks in a parcel, left the bulk of the Merryfield fortune in trust. The trustees were three in number and made a perpetual body in the appointing power of the surviving members should one of their number die. Should all three die, the trust would still not be permitted to fail for want of a trustee, through appointing power reverting to the courts.

Hattie Merryfield left nothing outright to her son Quinn but ground on which to build, and requisitions on the trust fund for materials, costs, and his own generous salary as architect. If he was to be an architect, let him prove it; she left him nothing else.

Without fully realizing it before the hand of death plucked her off, Hattie thereby established a line of Merryfield architects, no provision having been made for members of the family who were not actually occupied with the construction of the Merryfield Tower. The trust fund was established for the convenience of male descendants in the Merryfield line, architects alone, unto the end. The "aliens" were naturalized.

Having leisurely plotted seventy or eighty stories and left the top of all his elevations blank, Quinn Merryfield raised two sons, Edwin and Vincent. Edwin, the elder, received careful training in all branches of architecture, the commercial specialized, and Vincent was left to his own devices. In the course of time Edwin drew up a complementary set of prints, left the head off his tower, also. The Merryfield heritage became the ritual of leaving the top off the tower. Matters standing as they did Vincent seized the sunniest chambers on the second floor of the tower, then a paltry seven stories in height, and

devoted himself to the scientific pursuits that interested him.

"But how——" Vincent interrupted.

"Of course," said Cope grimly, "you were the Merryfield 'alien' then, weren't you? Fortunately, in the latter days of Richard Merryfield, in 2308, to be exact, construction on the tower was halted by enactment of the legislature. The topless tower reached its conclusion at last. A number of slight earth shocks persuaded faint hearts in the State legislature that the mass of the tower was already sufficient to obliterate half the population if it were to fall.

"Thereupon court action, over the heads of the trustees, returned the Merryfield estate to the family. This, after generations of Merryfields had raised this tower nearly seven miles above the surface, and after the juggling financial wizardry of the perpetual body of trustees had insinuated their control into practically every major enterprise and government on the civilized globe. Whew! What a joke!"

"What happened to Richard Merryfield?"

"He died five years later, in 2313," said Cope, "before he had a chance to do much damage. He was without issue. He wanted to exercise his full authority in world affairs, but he was incompetent. Insane, perhaps. Hence this governing board in the Merryfield Corporation, of which I am director. The courts began that also."

"What is my position, then?" Vincent demanded. "You say I own all this, the tower, everything."

"That is quite true," Cope admitted reluctantly. "Italy cannot war upon Austria without your permission. No ruler, dictator, or president can be elected save on your order. So far it has all been done through legally appointed representatives. Mockery, isn't it? Once you were a mere amateur experimenter in this tower, working on a limited allowance, for all your power-

ful name. Now you have everything. Everything! You have greater authority than any other one man ever had, Vincent Merryfield. It's time you came. I am happy to be at your service."

"So you knew I was coming?" Vincent asked. "The glass case—all my apparatus is here still——"

"Coming?" Cope was perplexed at Vincent's doubt. "Of course! It has always been known that you would 'appear' sooner or later. We are not blind. As you see, it was thought advisable to move several chambers on the second story to this one. Fanatics, you know. You have been the object of murder a number of times. The glass case was for your protection, of course. I am terribly sorry that you were inconvenienced."

Cope opened the inside door of the chambers, excused himself.

"I should advise you not to leave the floor," he said. "Your appearance must be announced beforehand—routines——" He stared through the windows into the blazing afternoon. "Is there anything you wish personally before I go? The library and lounge is through that door, if you care to smoke. Food? Would you care for companionship, perhaps? Some one to——"

Vincent cut him short with a quick, embarrassed shake of the head.

"Very well." Cope shrugged a little peevishly. "I will be back shortly."

VINCENT returned to his machine first, the apparatus that had brought him here out of his own time. Time traveling—an idle dream back then, spanning the years with one stride. This was the machine that had finally accomplished it, for him alone. That the concept of time was equally the concept of matter and energy since one did not exist without the other—that he had proved. That in controlling matter and energy man partially controlled time as

well—that he had proved also. Full control he had established.

Two dials alone guided the apparatus, one the frequency of vibration, one the strength. His stride through time depended on no more than the proper manipulation of the two dials, the head-gear with its electrodes. A simple mechanism essentially, as all mechanisms are. The loose jumble of tubes, still with a simple function, converters, powerful condensers—all were exactly as he had left them. Were they? Nothing was changed save in the machine's antique appearance, the handling of the centuries.

Generations of attendants and experimenters had nicked the apparatus, twisted connections and straightened them again. Two bulbs were obviously burned out, had not been replaced. Worse and worse. The foil on the plates of the current amplifier was badly scraped; he wondered how it had functioned at all after such mishandling.

The twenty-four bulbs in the "feed" cabinet, on which the dials were mounted, were loose in their sockets. One was a strange affair, a double-vacuum arrangement with wiring inside, a thing that he had never seen before. Strange! He pulled it out, saw that it was an improvement on his own hook-up, a short cut. Three or four of these would do instead of his two dozen.

Vincent suddenly felt weak in the knees. There was something he had not taken into account, what had mystified him in Cope's advance knowledge. No matter what year had been his spring-board, no matter in what year he reappeared, the apparatus, and himself with it, perhaps, must have been currently in existence. One did not brush through time at once, brush time aside, as it were.

Traveling through time was a matter of acceleration, not simply a vacant leap. In all the time that had elapsed since he began work he had really been at the

mercy of living men that surrounded him. He was not unknown. His passage was recorded by a world population. However instant his flight to himself, he was, as far as the Merryfield interests were concerned, merely a living phenomenon to be preserved and guarded in the recesses of the tower.

In a single blur Vincent had really experienced cataclysms, famine, and war—five hundred years of recorded history while the Merryfield Tower mounted heavenward with its increasing, absolute importance in the earth's government. All in the wink of an eye. To Vincent it was a complete acceleration—a blur, a crash of light and sound. But to the Merryfield trustees, to the army of big and little officials, under-directors and stenographers, department heads and secretaries, and the interminable cavalcade of curious visitors, Vincent Merryfield's bodily functions had been slowed up to the point where the reluctant beat of his heart was an item of international importance.

He checked over the wiring of the machine to see whether anything else had been disturbed. One of the most important devices in the apparatus was a parallel-plane arrangement of current-sensitive metal plates at the rear of the cabinet. It was inclosed in glass and so delicately adjusted that a careless jar might render the apparatus useless. Bombardments of deuteron particles oscillated between the plates, and when the machine was in operation a grid screen of bare platinum between the plates absorbed the greater number of the particles and carried them down through the apparatus proper in a steady stream of high-frequency energy.

It was part of the means he developed for transforming electrical energy into the elusive kind of force he required. And largely a matter of repeated power amplification and filtering through the screens and tubes. The tubes, of course, sooner or later filled with a slight de-

posit, burned out. Two of them dead. The wiring in the glass box was obviously wrecked. The platinum filaments were free and vibrated delicately on their terminals.

Vincent worked a switch rapidly on the cabinet, turned it on and off several times. There was no responding whine. He followed terminals through the amplifying apparatus on the floor. Behind this set-up of metal rods, vacuum tubes, coils, a Gordian knot of scientific ingenuity, his feed cables hung free with bound ends.

"The hell!" he ejaculated. "It's dead!"

He completed a profane circuit of the pile of mechanism and ran perplexed fingers through his hair. Well, the machine would be easy enough to repair. He wondered, nevertheless; the initial impetus of the machine must have been sufficient to carry him thus far. The notion of a prank obsessed him; he felt a little discomfited that the phenomenon he had experienced had been at least partially an accident.

In the library, the door to which Cope had pointed out to him, Vincent found cigarettes and smoked one while he examined titles on the shelves with curiosity. Nothing familiar, when he managed to decipher words at all. Written English, at least, had changed beyond recognition. Thoroughly phoneticized. But one title was indisputably "Essentials of the Merryfield Plant."

His own name, indeed, appeared frequently in what constituted the technical section of the library, though the alphabet itself had suffered corruption in form, and he had no little difficulty at first in identifying letters. Vincent opened one of the books, was too impatient to read very far.

He wandered nervously back into the laboratory, flushed and profoundly embarrassed over his predicament. From what Cope and Vincent's own examination of his apparatus implied, his

body had been on show to hands and eyes for five hundred years—museum piece. He felt smeared, grimed; in a sudden, paradoxical feeling of exhilaration he felt an immediate necessity of bathing. They had bathed him often enough in those endless years, he supposed. He was not wearing his own careless clothes any longer. These were new, of an odd cut. He smelled of faint perfume and antiseptic, a queer mingling. They had taken good care of him, all right, had nevertheless violated what he chose to call his personal sanctity.

A DISCREET knock on the door. Vincent heard it when he was busy repairing the plate filter, having found the greater number of his tools in the drawer where he had left them.

"Come," he said absently.

Soft feet slipped into the room. Vincent looked up and saw Cope, a hard gray bulk of man who was introduced as Secretary of State Marvin Croydon, three young women. Croydon left immediately, having given Vincent the most insulting, searching stare to which he had ever been subjected.

"What did he want?" Vincent demanded angrily. "He didn't say a word."

"It wasn't necessary." Cope smiled. "All he needs to say to the president is that he has seen you."

"Who is president now?"

"What does it matter?" Cope was indifferent. But he added, "Richmond Thomas."

Vincent barely acknowledged the introductions of the three young women. Their functions were simple. One to bring him papers to sign, papers he could neither read nor understand; Cope's signature was full authority for any act of the Merryfield Corporation, Vincent's a mere formality. One to take such dictation as he cared to give, which would be valueless without the

corporation's sanction. All this was explained most subtly by Cope in endless and suave detail to avoid any suggestion of affront. The third secretary was Vincent's companion.

"In other words, I have no authority whatever," Vincent mocked.

Cope said nothing, waited patiently.

"How much does my inheritance amount to?"

"Even I do not know that," Cope admitted.

"I wish it converted into cash at once," said Vincent grimly.

Cope stared at him with incredulity. He became visibly irritated. "Impossible!" he ejaculated. "You can't convert flesh and blood into metal. There is no balance between cash and property, never has been. Please, sir! Exchanges of credit have no substance. There is nothing for you to buy, sir. You don't need actual money. If you wish to travel you may do so, under escort. Anything else you wish will be provided immediately. You lack nothing."

Vincent had a mental image of himself inclosed in the glass case, with an endless queue of sight-seers and authorized pilgrims filing past his still body.

"Privacy!" he said bitterly. "I have everything, and I have nothing at all. I told you I wanted nothing. Get out, all of you!"

"You needn't take it this way, sir," Cope expostulated. "What in Heaven's name did you expect? What's the matter?"

"I don't want any of this," Vincent cried. "I never had any share in the Merryfield fortune and want none of it now. You're right. I was the Merryfield 'alien.' Except for an accident, I'd have no more now than I had then. I got along well enough then, by myself. I want to be alone now. Will you get out, or is there some damned regulation to prevent me from throwing you out?"

Hayden Cope wagged his slim hands helplessly, backed off a step or two. Two of the secretaries left in a state of consternation. The "companion" remained, looked at Cope inquiringly. She was of good family, a handsome, smooth-skinned girl with honey-colored hair and straight gray eyes; she lived in the chambers opening on the lowest terrace of gardens down the gallery, one of a flight mounting the east face of the tower.

"The girl, sir," Cope choked, almost wringing his hands. "Miss Hollis."

"Send her out!" Vincent snapped. "I told you I didn't want anything! Fire her, fire all of them, or whatever you do with them!"

"That's just the point, sir," Cope was anguished. "You can't do that. All these people have been appointed to perpetual offices established by the State. There are no supernumeraries. If Miss Hollis is discharged, her office is abolished. She must leave the tower. All offices are filled, and there is no other place for her, unless she is sent to the country or returned to training school. What humiliation!"

"Then I hold power of dismissal," said Vincent savagely. "That's something! Does that include you, Cope?"

"No, sir," said Cope cautiously. "You see, sir, all offices are graded by letter. Governmental letters are exempt. Of course, tower authority and governmental authority amount to practically the same thing—you don't realize the ramifications of your interests, sir. But in reality you have the authority to hire and-discharge only such officials as are directly responsible to you.

"It so happens that my position here is equally an office in national policy, and I may not be removed save by act of congress. My office falls in the 'A' classification, and the letter 'A' ordinarily follows my name in all signatures, as you will see when your secre-

tary brings in important documents for you to sign. Your companion is Miss Carol Hollis 'L'."

"WHAT a ridiculous business!" Vincent raised his voice to a fury of contempt. "Clockwork, eh? All labeled and classified, all of you. Cogs! All your little duties indexed, a government of robots. Is that it?"

"There have been no depressions, no governmental calamities, for two hundred years," said Cope quietly. He was a clever enough man to perceive the frustration in Vincent's manner. "If many trivial restrictions have been placed on the pursuit of happiness, it is for the universal good."

"A few minutes ago you spoke of war. That has a familiar sound."

"'Permissory wars,' sir," Cope explained wearily. "There is a certain limited type of intelligence whose combative nature must be curbed. Men of this type make up our armies, and are periodically pitted against each other. They are only children, after all, and it has been found best to turn a primitive thirst for blood into a game."

"Birth rates are under State control; there is no reason for cutting down populations save in certain sections of Asia, where four times a century, on the average, the International Permissory War Games become State combats in earnest and men are really slain. None of ours, of course, or very few of them. Our men frequently experience a forgivable stomach sickness at the sight of blood and are honorably put hors de combat."

Vincent glared at Cope, suddenly broke into a riot of laughter.

"Yes, sir," said Cope politely. "The next games are scheduled for the summer of next year on the South American coastal plain. There are scores of old ships to be sunk, a number of outmoded planes and rockets to be demolished. If you care to see them, sir, I believe I can manage to have the

games scheduled back to next month."

"No!"

"And Miss Hollis, sir?"

Vincent caught an expression of sheer terror in her grave, gray eyes. Discomfited at a situation he could not solve at the moment, he turned his back without word or sign, returned to his litter of useless machinery. He continued repairing it. Cope made a gentle sign to the girl and slipped from the room with a long sigh of relief. The control board of the corporation was in session on the floor above, Vincent having precipitated a national crisis by emerging from the glass case.

Cope was long overdue. He felt that Vincent's singular position had been thoroughly explained; that henceforth the Merryfield Corporation stood in no greater jeopardy than it ever had. After all, the problem of Vincent Merryfield was a purely personal one. His carefully delineated place in the scheme of things remained precisely the same whether he moved in world affairs or stayed entranced in time. He would no doubt acquiesce to the normal duties required of him in the course of events.

Thank Heaven Vincent's assumption of his inheritance was no more difficult than it had been! Cope glowed with faint pride in his own tact. He vanished up a gleaming, broad staircase into the council chamber and out of the picture.

Vincent felt the gaze of steady eyes and at last turned. Miss Hollis was sitting quietly on the wall lounge next to the windows. Carol Hollis showed the carnation-glow of intelligence in her face, and she was intelligent. It was a requirement of her office. She nodded to him with perfect composure and said:

"I think I understand." Her voice was sweet, expertly trained. "It won't do you any good."

"The contrary. The old-style bulbs will do well enough, and facilities for making those I need will be granted if

I make the demand. Power cables will be run to this room and connected if I have to do it myself. I'm going back, reverse the mechanism. After all," he grinned, "I owe my brother Edwin nearly a thousand dollars for supplies, and for five centuries I haven't felt right about defaulting on him." He sat beside her on the lounge.

"You haven't read the books in the library yet, of course."

"No. I'd have to learn to read all over again. The words don't make sense—alphabet's changed. I don't suppose you realize that."

"But we do. All of us in this section of the tower speak and write as you do as a part of our training, in case you were to come. Modern English, though, is only a corruption of late English. You will learn quite easily, I'm sure."

"I'm going back where I belong," Vincent insisted petulantly. "I was never happy back there, but it's worse here. I'm through."

"You can't go back. Don't you understand? That machine is no good to you now—it was good for only one thing. There are a number of books in the library that will explain."

"I think I already know how that mechanism operates," he said acidly.

"I suppose you do, in a way." She folded her hands tightly in her lap. "It is one of the most incredibly ingenious things that any man ever built. But haven't you wondered why no one else has used its principle after all these years, when it was common knowledge? You can go forward in time, Vincent, the way you have done, but only within limits. You couldn't have stood much more of it.

"ALL THAT beautiful mechanism does is induce a cataleptiform condition in the body," the girl went on. "The operator receives an instant, paralyzing shock that is all but fatal. It causes an insidious structural change in the body

cells. Not true catalepsy; it's what is called bodily deceleration, and had been used in a modified form in the hospitals for the treatment of certain blood conditions. The device is hazardous to use. You took a terrible chance, Vincent."

"Catalepsy!" he exclaimed. He was reaching the end of his short patience, hemmed in physically and mentally. "Impossible! I don't know much about that, but I know perfectly well that prolonged catalepsy causes death in a mighty short while, a few years at the outside. You're mistaken, Miss Hollis 'L'."

"I am not mistaken." She smiled respectfully. "It is all common knowledge. You have been under observation always; the bound reports are in the next room. Every heartbeat, every cubic centimeter of breath you have taken, has been recorded over long periods of time. Time traveling, is that what you thought it was? Not exactly that."

"When I have the machine repaired, we'll see," said Vincent grimly. "Time can be crossed both ways."

"I feel sorry for you, Vincent." Carol's eyes shadowed. "Terribly sorry. Don't you see that time doesn't exist outside of the concept itself? That it is only an aspect of matter, of energy? They are inseparable. You only emphasized the fact with that marvelous machine. You can arrest the action of the body, prolong your life great periods at a time, but you can't go back. Never. It's no use.

"And you are always taking the chance that your body may be disposed of by some accident while you are in the trance. You are dependent on other people, on constant attendance to keep you alive. Did you know that you had to be given small quantities of food and water periodically? Please! Try to forget about it—there's nothing you can do." She moved closer in her trained, subtle way; she had a bland, exciting perfume.

Vincent rose slowly, staring down at her incredulously. He still did not believe. He didn't want to believe her. Somehow he had made a vast error that his mind stubbornly refused to grasp. Catalepsy, or as she had said, a cataleptiform condition. Cataleptiform—it was a trick word, and he wondered where she had picked it up. Out of the books here, probably, if her official duties were really just living here and waiting for him. Carol Hollis 'L'. What a paltry existence he had come into!

As he walked slowly across the room he mentally checked over every last detail in the apparatus he had constructed, balancing her word against his own belief. His theories of atomic disintegration, the division of forces through amplifier, tube, and condenser, the nature of the force which the apparatus generated.

He came back to the time concept itself. He had been working backward and worked himself into a delusion. It was a concept, then, not an entity at all. Of course! What fool could ever imagine it to be otherwise? Something that could be measured, but not controlled. Time. No bridging it.

"Vincent!" Carol called to him.

He kept his back to her, stared out of the windows from the two-mile height of the gallery. Now that he could not leave this place or this time save in one direction only, a terrible nostalgia surged through him till he thought he would suffocate. The necessity of motion, of going somewhere, anywhere, became a madness. He pushed open the windows. Cold—and the heart-quickening, rarefied atmosphere.

He picked the jacket machine from its peg on the wall, and for lack of something better to do tried it on. It was an easy way of escaping Cope, at any rate, leaving the tower and the people in it behind him. He determined to go be-

low. He swung the control pendant over his shoulder and held it firmly, stepped briskly down the gallery. The girl sprang up from the couch and followed him. She watched him anxiously from the window-threshold, shivering.

Vincent paused at the take-off space in the balustrade, automatically checking over Cope's brief description of how the elevating device was operated. It was an odd gadget, resting on his shoulders no more heavily than a pillow. He wondered whether it would jerk, how much it would pull when he pressed the button that stopped descent. Carol ran down the gallery frantically as he stepped off. A veneer of thin ice lay in patches on the stone.

Directly below, far down at ground level, was an open court. The architecture on the tower's east elevation left the court free so that any one using the elevating devices would be unimpeded in taking an instant drop or rise to any story in the tower.

Vincent's body accelerated in its fall at a terrific ratio. Gravity, at least, he thought whimsically, still exerted the same old pull. That, at least, was unchanged. He tossed the control pendant free over his shoulder and went down feet first like a god, his arm folded across his breast and his eyes outward toward the sea.

Carol had reached the break in the balustrade almost in time to touch his shoulder. Then he was below. She leaned over the balustrade staring down, her tiny breasts pressed flat against the stone and her knuckles white. Ten feet, sixty feet, twelve hundred feet and more—he went down like brave thunder, and then she saw the remote, plunging speck toss something over its shoulder. She screamed with all her might, sickened with longing and terror:

"Vincent!"



*I lost count of the doubling and redoubling, for they
were moving now, with a whine of hunger.*

A Scientist Divides

by Donald Wandrei

Illustrated by Elliot Dold

I SHALL always remember him as he stood there by the slides and microscope that summer afternoon three years ago. His face was enkindled with the glow that is present only at the immediate moment of a great discovery. He held the beaker in his hands and looked at it with all the loving pride of a mother studying the first babe.

Yet it was characteristic of Dr. Weylith that his eyes wore a far-away look. It was never the discovery that mattered so much to him, as it was the potential and far-reaching effects that future generations might enjoy.

Dr. R. L. Weylith was then one of the country's brilliant biologists. He had made a name for himself by his exhaustive researches into the nature

of cells and cell structures, chromosomes, hæmin, and more esoteric minutiae of the human organism. He was one of the men who developed the hyperoxygenic treatment for schizophrenia. He successfully isolated, identified, and photographed the first of the nonfilterable viruses. Yet he had scarcely reached thirty when he received the highest honor, the most distinguished medal, that science bestows on its own. And he was only thirty-five that afternoon three years ago.

A slender, quiet man, he carried himself with a curious and disconcerting air of alert detachment, as though he saw everything, but could not pause in his progress toward ultimate goals. Always tolerant, gracious, and generous, he encouraged and helped others even when his own work suffered. Gifted with a keen mind and a vivid imagination, he took advantage of every educational facility to specialize in the methods of science, making biology his particular field.

He was no mere grubber of facts. His work was precise, elaborately documented, but also linked to the great dreams that lured him on. He was that rare and enviable type—the pure scientist in his technique, the pure visionary in his mind, the successful joiner of both in his work.

Does this sound as if I was writing his epitaph? I am. Or I hope I am, since I cannot be positive.

Our relationship was somewhat unusual but readily understandable. I had long been interested in all phases of modern science, but without the aptitude or the interest in specializing in any given field. I was fascinated by the possibilities of new discoveries and naturally turned to writing. Professor Weylith, on the other hand, confined his published work to material that would bear the strictest and most technical scrutiny.

It was difficult for me to find laymen

sufficiently versed in various categories of science to talk to, and it would have been suicidal for Weylith to expound some of his more fanciful ideas to his colleagues. But the two of us got along famously, for in him I found a man I could deeply admire, and in me I hope he at least enjoyed an enthusiastic listener.

I advanced the idea that caught his imagination and set him off on the years of investigation which culminated that afternoon. Now I regret ever having mentioned it.

For the years that I knew him, I saw him regularly and discussed everything above the sun and beneath the clouds. I was the only person who knew the nature of his last experiment. It is just as well that he permitted no one else to share the secret. The world would be a less complacent globe.

Yet in spite of our numerous conversations, I did not go with a full understanding of what might ensue that afternoon when Dr. Weylith telephoned and asked me to drop in at his laboratory. I had originally thrown off my suggestion as the germ for a fictional romance.

"Science tells us," I had once remarked, "that the higher organisms all evolved from a single-celled animalcule or amoeba which represented the first life-bud eons ago. From that humble beginning came vertebrates and man. Why may not man himself now be only a similar basic cell out of which even vaster and more complex organisms will evolve in the course of ages? Imagine what would happen if a superscientist treated man as such a cell and then, in the laboratory, constructed from one or dozens of men a creature of the year one billion!"

That was the thought which fired Weylith's imagination, but not quite in the way I believed. Through nearly five years of work, he kept his real objective to himself, while discussing my sugges-

tion as if he was making progress on it. Since the idea was merely fictional, and rather far-fetched, I did not seriously think he would turn it into reality.

Then, too, he was noncommittal over the phone. He merely suggested that I drop around if I would like to see something interesting. From his casual tone, I suspected that his request had to do with the topic we had often discussed. I decided he had probably made an important new discovery in the matter of cellular structure or an allied subject. I knew he had been making extensive researches of late in cosmic radiations, chlorophyll, hæmin, hormones, and glandular secretions.

IT WAS about three in the afternoon when I walked into his laboratory and saw him with the beaker in his hands. The westward-slanting sun poured a flood of light through the windows, hot light, molten light, but the air-conditioned laboratory was cool and dustless. The window-staves split the light into rectangles. They left a cross on the side of his smock. His face seemed a little tired, evidently from days and nights of arduous work, but weariness never prevented a quick smile of welcome.

"It's worth being half cooked in that sun just to bask in the coolness here," I remarked.

"Is it hot out? I hadn't noticed. But come over and look at this."

I made my way between the tables of chemicals, slides, tissues, tinted specimens, microscopes, and other apparatus.

"What is it?" I asked when I reached his side.

He held the little beaker toward me. Inside it nestled a drop of opaque, reddish-gray stuff. There was only a drop, but nothing ever before gave me the creeps like that tiny nodule. It seemed to quiver with a strange and restless motion. It elongated, con-

tracted, rested, made an abortive effort to roll up the side of the glass toward Weylith's hand.

The reflected sunlight glistened on it. It looked pinkish, like an albino's eyes, slimy, like an angleworm's tip. It suggested in no single or specific way such diabolic and distorted anthropomorphic traits, so sinister a human nature in so subhuman a way, that I made no effort to take the beaker. The drop almost mesmerized me.

I bent over, and it slid up the side of the beaker so swiftly that I shrank away. The globule fell back, palpitated faintly and restlessly like a heart endlessly beating for a body to clothe it.

"What is it? I can tell you right now I don't like it, I won't touch it, and I refuse to have anything to do with it."

Weylith smiled. "That is why you write fiction. You romanticize things. I investigate them and find out their nature. Then they lose their mystery and neither repel nor attract. They are reduced to facts."

"Yes, but then *you* romanticize them by planning their ultimate possible use in the furthest future world. You haven't told me what this is?"

Weylith looked at the beaker thoughtfully. He shook it a trifle. The drop raced madly around the spot where his hand held the glass. "Hungry little devil, isn't it? It hasn't eaten since I made it."

"Made it? Out of what? What for? How?"

"Not so fast! I'll go back a little. Do you remember the day, years ago, when you suggested the idea that man might be only the basic cell of an immensely more complicated organism yet to develop?"

"Of course! I said also that it would be wonderful if some scientist could only speed up the cell and produce overnight the homunculus of the year one billion. Don't tell me that this is it?"

Weylith shook his head. "Hardly!

No; that isn't quite the line I was following. Your suggestion captured my fancy, but I went after it in a different way. After you left that time, I thought a good deal about the idea. Science has accepted as truth the evolution of multicellular organisms such as man from an ancient, original, single cell. You suggested that man himself might be, so to speak, only the real basic cell of which the primeval cell was only a part, and that out of man might evolve a complex being almost beyond our power to envision. Right?"

"Yes. Then what?"

"It occurred to me that a reduction instead of expansion might be equally interesting for speculation. The simple cell produced, through countless mutations, man, and was itself changed. Why, therefore, might not man carry within himself a different kind of cell, substance, or essence, which was his full being expressed in its least compass? I don't mean sperm, of course; I mean something that was the minimum refinement of blood, bone, tissue, organs, glands, secretions, and so on; perhaps inert, but at least possessed of the capacity for life; a modern cell that was the counterpart to the ancient, simple cell.

"Perhaps it might be found in extracts of each part of him, interfused into a unit. Perhaps he contained a hitherto-undiscovered gland or secretion that had the latent capacity of summarizing his nature. Perhaps one could construct a centimeter model of man, from tiny parts of the brain, the nervous system, the skeleton, the muscles, the organs, the blood system, the glands, the hair, the cartilage, and imbue it with life. Perhaps one might take cells and subject them to enzymic, metabolistic, biochemical, or other changes that would convert them into what might be called homoplasm."

"Homoplasm?" I queried.

"To distinguish it from protoplasm. And here it is."

I LOOKED at the malignant little drop with intensified curiosity and dislike. To tell the truth, Dr. Weylith's comments had partly escaped me, I was so fascinated by the actions of the globule. I heard without comprehension. One graphic picture is mightier than a thousand words. I saw the result of his experiment, and I had only half ears for the cause, the explanation.

But I managed to ask, simply for lack of any more intelligent comment that I might make: "What does it do?"

Weylith answered candidly. "I don't know. I isolated homoplasm this morning, and I haven't had time to go further. It appears to be sentient, animate, and locomotory, as you can see. What its other properties are, I don't know. I can't even say for sure that it is what I believe it is. It may be just a particularly voracious bit of protoplasm-plus, without any individual or special characteristics. I called you because I thought you would be interested in any case, since it was your suggestion that set me on my way. There are a good many tests yet to be made.

"For instance, how long will it last in its present state? Does it require food? If so, what kind? If not, why not? Are its actions spontaneous or deliberate? Instinctive or rational? Can it exist without air? And by what magic is it replacing the energy that it burns in its motions? It has hardly stayed still a minute in the last eight hours, yet it is as active as at creation. Is it directly converting natural or artificial light, or both, into energy? If so, it is the most wonderful little machine devised up to now and opens visions of immeasurable energies that can be harnessed for man.

"What everlasting dreams hover around this simple bit of homoplasm!

Just to look at it, you wouldn't think that this one globule is the full complexity of man reduced to a minimum, would you?"

"No," I said frankly. "I wouldn't, and I don't want to think so. My idea wasn't so hot after all, if this is what it boiled down to."

"On the contrary, it was a brilliant speculation. One thing you writers of science-fiction possess that most scientists lack is freedom from fact. You can start out with almost any concept, expand it to its most imaginative limits, even take liberties with science, and produce a vision of the years to come. But we who work in the laboratory must always offer substantial proof, back up every step with fact, and document our theories or claims by evidence that can stand the laboratory test.

"Domination by fact is both science's greatest safeguard and its worst drag. X discovers a cure for cancer. He knows it is a cure, but cannot prove it immediately. He tests it for years in every conceivable way on all sorts of animal tissues before he announces his results to the public and permits application to human sufferers. In the meantime, tens of thousands of victims die.

"Or take homoplasm. I know what it is. I've a good understanding of what it will do, and what its functions, properties, and actions are. That's why I keep it tightly stoppered. But I could no more announce its discovery to the world without perhaps irreparable loss of prestige now than I could make time run backward."

"It wouldn't surprise me if you even succeeded in doing that," I remarked, and sincerely. "All I can say about your homoplasm I've already said. I refuse to have anything to do with it. You could extol its virtues till doomsday, and I still wouldn't like it. See how it's quivering? It's been squirting around the beaker like a crazy thing

while you've been talking. It goes wild every time it gets near your fingers and that seems to be as often as it can. No. I'd get rid of it if it was my choice."

"You may be even nearer the truth than you think," Dr. Weylith answered ambiguously.

A ray of sunlight slanted through the glass of the beaker and turned the living stuff to a drop of scarlet flame, glistening like a bead of blood, beautiful in its own evil way. I shrugged my shoulders in dislike of it.

"Put it up on that shelf out of harm's way," Dr. Weylith suggested with a hint of good-natured banter we often indulged in.

"Not I, thanks. I wouldn't touch that beaker for a million dollars. Or a thousand, anyway."

Dr. Weylith, his sensitive features again wearing a rapt expression as his dreaming mind was absorbed by the homoplasm and fascination over the endless fields of conjecture it opened, stood on tiptoe and placed the beaker on a shelf.

I looked out of the window and saw the sun burn across pavements with a glare that bubbled asphalt and sent the heat waves dancing.

A faint tinkle and a heavier thud came from behind me. I whirled around.

Dr. Weylith sprawled on the floor, face up. A gash laid open his right forehead. I sprang to his side, saw that fragments of glass were imbedded in the wound, decided instantly it was a case for medical care. He must have lost his balance in attempting to place the beaker on the shelf, and it fell, shattering on his forehead and knocking him unconscious. I cursed myself for my reluctance to heed his request, even though it had been made in jest. The flow of blood was steady, but not large.

For fear of driving the splinters of

glass in deeper, I merely placed a clean handkerchief on the injury to act as a clotting agent while I raced to the phone in another room.

I CALLED the office of Dr. Weylith's personal physician, but was told he was in the midst of an operative case. To save time, I then called an ambulance and asked for immediate service. Weylith's name worked magic. I could expect the ambulance in fifteen minutes at most. I hurried back to the laboratory.

It does not seem to me that I could have been gone more than a half minute, but perhaps the telephone delayed me two or three minutes in all. It really makes no difference since there is nothing I might possibly have done had I returned sooner.

When I entered the laboratory and rounded the tables obstructing my view, I received a shock of horror such as I hope may never be repeated. Weylith's head was gone. The upper half of his clothing sagged, but a squirming and hellish motion affected it from some amorphous substance within. Almost as fast as my eyes could follow, the rippling spread down the torso and limbs. I was paralyzed in my tracks. I remembered the pinkish nodule, but that dreadful thought only served to stun me more.

Then, out of that loose and shapeless heap of clothing slid a mass a million times the size of that original drop of ooze; a reddish-gray pulp of heaving and awful life which left not the tiniest bone behind, not the least particle except the glass splinters and the now flat clothing. The stuff quivered damnably, shivered as in a wind, split in two by simple fission. The sun imbued those two mounds of jelly with a smoky and sinister glow. And now they began to eddy and swirl and extend upward. They elongated here, contracted there, filled out elsewhere,

assumed new form of terrifying significance.

"No! No!" I shrieked.

Before me stood two identical Weyliths, naked, each half the size of the original man. There was a duller luster on the faces. In the eyes there was nothing whatever of Weylith's intelligent and friendly gaze. They were dangerous, menacing, primeval eyes, and they stared at me. I wondered madly if each creature had only half the brain of Weylith, or no brain at all.

The homoplasmic drop, having absorbed every germ of Weylith's body, had divided, and each mass had built up a new body from the image of man that was inherent in it. That reproduction was faithful even to the cut on the forehead. And now a stranger occurrence deepened the spell upon me.

The two Weyliths took a step forward, but out of the cuts oozed a rapidly swelling flood of the pink stuff that deliquesced the bodies almost as soon as they had been formed.

The sweat trickled from my face, but my eyes burned and my forehead was hot, dry.

The two heaps quivered hellishly again, and I thanked the stars that no one else had witnessed the transformation. Or was I mad? Perhaps corroboration was the saving grace I needed lest I find this to be only a hideous hallucination. And still I stared, utterly incapable of motion.

The strange life puddles stirred eerily. They narrowed in the middle and separated into four. They swirled into mounting shapes until four grisly phantoms, four pigmy Weyliths, glared at me from eyes ferocious with basic, subhuman, food desire. The four demons tottered toward me, their pink-white eyes blank of any intelligence. They were eyes neither of man nor vertebrate nor fish, neither insane nor sane—just hungry eyes.

I acted as I certainly did not wish

to act. I wanted to leave that laboratory forever behind. Something drove me, some subconscious but lightning intuition of what might happen, some unreasoned desire to do what my dead friend would have preferred. I sprang to the door, locked it, whirled around.

Already the four Weyliths were headless. They stood in their tracks like so many decapitated monstrosities, while the streams of ooze pouring down took with them the chests, torsos, limbs, every vestige of those abominable entities.

The speed of the cycle increased perceptibly and proportionately as the mass diminished. The two scientists had divided into four and the four into eight in only three fourths the time that the scientist had first divided. The life of the eight little things was correspondingly shorter, but they moved a step closer.

Then, always more rapidly and horribly, the fission and reproduction of form, the deliquescence and fission again, swept through the cycle. No nightmare was ever more gripping or terrifying by its distortion of the familiar than this travesty of the highest type of human being.

With every fission, the characteristics of the body became coarser, less human, more corrupt and devolutionary, until there was not even a remote resemblance. Weylith, divided and redivided, swept into the ceaselessly changing reduction of this appalling life-cycle, became so many naked little animals ravening for food.

They closed in on all sides. I lost my head. I kicked at one of the new knee-high creatures. My shoe plowed into it, and it clung like glue. Panic seized me, but the return to plasmic state caused the stuff to fall to the floor by gravity.

I dashed for the window and leaped on a radiator coil. It was two stories to the cement sidewalk.

I FACED the laboratory. It swarmed with the ever-increasing horde of that ever-contracting spawn—128, 256, 512—I lost count of the doubling and redoubling. They were moving now. They made wailing cries. A shrill and abysmal moan of hunger swept from their ranks when they assumed their momentary and minute imitation of man's estate. A sucking sibilance filled the laboratory when they returned to the homoplasmic stage of their brief life-cycle. Tummocks of reddish jelly. Little ratlike things of human semblance. Surge toward the radiator. Deliquescence. Smaller balls of homoplasm. Retreat into slime, advance into anthropoid form. I saw a million centuries bridged in seconds.

For a few minutes I felt comparatively safe. But I had only begun to consider the peril of my situation when a new menace rose. A great swarm of the viscous plasms turned into inch-high caricatures of Weylith at the foot of the radiator. Instantly they locked, scrambled up, shot a living pyramid toward me. The wriggling mass with all its thousands of intertwined limbs and pinpoint eyes shining with baleful luster fell short of me by so small a distance that I was on the verge of leaping out of the window. Then the column collapsed, and I shivered, for I knew the next cycle would not fail of its objective.

What could I do? No matter what the cost, I could not escape from the laboratory, could not loose that demoniacal horde upon the world. Somehow I must destroy it. Somehow I must save myself and obliterate every trace of these subhuman monsters. And every moment the task grew more difficult. I was still reasonably certain that the stuff could not get out. The laboratory had a concrete floor. The windows were weather-stripped, and the door soundproofed. The ventilators were in the ceiling. But if the things became much smaller, they might seep

out through invisible cracks and crevices.

The column of myriad, terrible little beasts, like human beetles, shot toward me again in a rising geyser. The nearest table was fifteen feet away. I leaped in panic. The column swerved instantly. Even terror did not give me strength enough. I landed on a cluster of the plasms and felt them squirt in all directions as if I had splashed in a puddle.

I bounded to the table. A jar of hydrochloric acid stood on it. I sloshed the acid over my shoe, wiped it with a piece of waste cloth. My hands burned. I poured the container on the floor. The acid spread, ate its way in a widening pool. A thin but sharply reedy wail crept up. The whole laboratory was paved with a film of ceaselessly undulating slime that alternated with antlike things, save where the acid lay.

There came a pounding on the door. "Ambulance for Dr. Weylith!"

"Just a minute!" I shouted, and made no effort to move.

In the stress of that moment, my senses must have become preternaturally keen, my mind clear as seldom before. I was in so tight a spot that no matter what happened, I must lose out somewhere. My only choice lay between trying to save my own skin for what it was worth, or accepting all risks and doing what I could to annihilate every last mote of the homoplasm.

The beating on the door repeated. "Open!"

"Dr. Weylith has gone elsewhere! I'll be there in a few seconds if you want to wait!" I called.

On the next table lay an electric furnace, gas burners, thermite and cordite. And a blowtorch. I don't know what Weylith used them for. The moment I saw them, I sprang over, pumped the torch, and lighted it. The flame hissed forth with the roaring sound peculiar to gasoline blowtorches. And suddenly I felt protected.

I seared the floor. Foot by foot, I went over the laboratory. I burned my way ahead in swinging swaths. I scorched the legs of every table, the base of each wall. All surfaces in contact with the floor, I subjected to that crisping flame. And a dim, hideous, murmuring cry squealed constantly in my ears, punctuated by the pounding on the door. There was a sickening smell in the air which the ventilators were powerless to carry off.

Nauseated, shaking like the jelly I had destroyed, and on the verge of collapse, I finally extinguished the blowtorch and tossed it on a table. I scarcely cared what happened now. Then I opened the door.

PROBABLY most people are familiar with the incidents of the next six months. The circumstances were highly suspicious. I have no complaint against the authorities for trying to establish a case against me. It was out of the question for me even to hint at what I had seen. I took no one, not even the lawyer, into my confidence.

The case became one of headlines through no fault of my own except the desire to protect the memory of Weylith, who was as dear a friend as I ever had. Perhaps I was foolish. I am in no position to say. But I feel absolutely certain that the case would have been far more notorious and given over to infinitely greater reams of speculation had I tried to explain exactly what happened.

So I botched the tragedy. I told the ambulance men that Dr. Weylith had already been taken away. I would not tell them where. The police became inquisitive, questioned me. They wanted to know why I had called a physician, then an ambulance, why the laboratory floor was seared. Weylith was listed as missing. Suspicion of murder developed.

Doubts of my sanity arose when I gave confused explanations or none at all. There were detentions, specialists, grillings, examinations. A grand jury investigated and handed up a presentment. But there were no witnesses, no proof of homicide, and no trace of a body. Eventually the indictment was quashed for lack of evidence. I was a free, but discredited, man.

That was nearly three years ago. And what saved me as much as anything was an occasional rumor that Weylith had been seen in other parts of the country.

To me, this is the most heartbreaking aspect of the tragedy. I did my best to give Weylith the absolute oblivion he would have wished, but I must have failed. I thought I was thorough, but evidently I was not thorough enough. The division and subdivision and fission of that strange plasm must have reached such minute degrees and such immense numbers that the blowtorch was inadequate.

Perhaps some of the plasm adhered to my shoes in spite of the acid. Or it may have crept up the walls. Or a few flecks might have found some opening invisible to human eyes and thus made their way out of the laboratory. Even so, I think the stuff might have worn itself out—if vertebrate forms had not been susceptible to wounds and injuries; for the homoplasm would apparently never have spread had it not been for direct blood openings.

A child, scratched by brambles, was seen to cross a field near Greenwich one morning. She was never seen again. A caretaker pulling weeds claimed he looked up and saw a naked man, brutally resembling the missing Dr. Weylith, suddenly appear in a field. The child would have reached there about that time.

But the caretaker unfortunately added that he was so shocked that he rubbed

his eyes. When he looked again, there were two naked men, and they seemed smaller because they were making toward a clump of woods. His story would have been completely discounted except that the child's clothing was later found near the spot.

A butcher in Chillicothe left his store one noon to deliver an order around the corner. When he returned, he saw a strange little naked boy climbing out of a window. He ran shouting toward his store and asserted that a gang of the brats swarmed from every opening. His narrative would also have been met with disbelief except for the fact that not an ounce of meat remained in his shop, with one exception. Cuts, loins, quarters, whole carcasses, liver, even suet, were stolen. Only sausage in casings were left. He thought he had recently seen a picture of the first youth, but he could not remember where.

At various times, in the years since, and in widely scattered parts not only of North America but of the world, the missing Dr. Weylith has been reported seen. A legend grew up about him, rivaling that of Ambrose Bierce. Sometimes the news dispatches carried items about his reappearance simultaneously in opposite countries of the globe, and in places thousands of miles apart.

And with disturbing frequency, the press also carried accounts of phantom scavengers that looted food markets; of hordes of debased, naked, wild boys who vanished as suddenly as they were seen, leaving no trace behind them; of anthropoid, adult footprints that successively and mysteriously became youth's footprints, children's steps, the marks of babes, and finally ended in mid-fields.

A party of explorers came upon an African village where stew was still cooking over a hot fire. But not a trace of any man, woman, child, or animal was found, nor were the villagers ever discovered. There were dwindling foot-

prints, no other clue. I alone knew what had happened, and I preserved my silence.

TO THIS lengthy, and still-growing list, I will add but one more incident, the incident that caused me to record these facts for the guidance of people, before I, too, disappear of my own choice.

The episode occurred last night. It had been a hot day, and I went for a long walk in the country. As evening drew near, I found myself sauntering down a narrow road that wound between pastures and fields and hills and an occasional farmhouse. The sun hung just above the horizon, and was already half set, when I paused to rest against the wooden fence inclosing a pasture.

Cows munched in the field. Most of them lay under the shade of trees on the far side of the field, but a couple of Jerseys grazed near by and lazily switched off the attack of flies and gnats. It was a peaceful, rural scene that I admired.

Then one of the Jerseys bellowed. The other moved away. The rest of the herd shifted uneasily. The first Jersey moored plaintively. Sickness and nausea overcame me when I saw it melt down into a swelling puddle, but horror kept me watching though I could have predicted what was coming. The cow ceased struggling, and its eyes glazed

while the fore half of its carcass still remained, but that, too, swiftly dissolved into the reddish heap.

Then that shapeless pile took form, and against the dark and lurid western sky stood outlined the gigantic and naked figure of a man. Man? It was a dreadful parody, a grotesque and misshapen monster, of bestial head, apelike hands, and animal feet, whose body was only faintly human in nature, and of a blackish hue.

For seconds the giant stood there, before plodding sluggishly toward the rest of the herd, and it lowered its head to utter a sound, a throatless and primeval food howl, the like of which I never heard before. The huge shape collapsed into slime, and the slime fissioned, and I fled on my way while twin but smaller monsters rose behind.

There is nothing more to add. There is nothing that I or any one can do, now. The homoplasm carries within it some instinctive or hereditary or vestigial image of man. Because its human manifestations are invariably cast in the likeness of Dr. Weylith, I must assume that he created the original stuff from his own body. So long as one drop of that now world-migrated homoplasm survives, so long will there be theft of animal food throughout the globe, and so long will the everlasting figure of Dr. Weylith be re-created, though it be till the end of time.

FROST, by Donald Wandrei, is the feature story in this month's issue of **CLUES**, now on the stands. It introduces *Ivy Frost, Sc.D.*, the most fascinating character since Sherlock Holmes, and combines the best qualities of the best science- and detective-fiction into something wholly new and absorbing. Don't miss it.



In his careless, kindly way, he disintegrated the general's best horse and almost demolished the old boy himself.

Dragon's Teeth by Wallace West

A story that might have been true!

Illustrated by Elliot Dold

"The kings of Atlantis became the gods of Greece and Rome."—IGNATIUS DONNELLY in "Atlantis, the Antediluvian World."

OF COURSE I realize that the proper place for State secrets is in the dusty archives on Mount Olympus, or better yet at the bottom of the sea. On the other hand, this story about Cadmus, the dragon's

teeth salesman, and the sad fate of his daughter Semele is simply crying to be told. Since it can't be printed in Atlantis without creating a scandal, I'm going to deposit this manuscript in the corner stone of the Pillars of Hercules.

The whole thing started when Poseidon, who was a very sick man at the time, burst into one of his ungovern-

wreck of which he rescued the engineer. I couldn't learn anything about the actual battle from his brains, since he didn't know much except that it was a zone of force that did the real damage, and that the two strange ships were small and spherical.

"The *Skylark* and the *Kondal* answer that description and, while the evidence is far from conclusive, we shall assume as a working hypothesis that the *Skylark* and the *Kondal* did in fact attack and cut up a Fenachrone battleship fully as powerful as the one we are now in. That, as I do not have to tell you, is a disquieting thought.

"If it is true, however, Seaton must have left the Earth shortly after we did. That idea squares up, because he could very well have had an object-compass on me—whose tracer, by the way, would have been cut by the Fenachrone screens, so we needn't worry about it, even if he did have it once.

"Our second lead lies in the fact that he must have got the dope on the zone of force sometime between the time when we left the Earth and the time when he cut up the battleship. He either worked it out himself on Earth, got it en route, or else got it on Osnome, or at least somewhere in the Green System. If my theory is correct, he worked it out by himself, before he left the Earth. He certainly did not get it on Osnome, because they did not have it.

"The third lead is the shortness of the period of time that elapsed between his battle with the Fenachrone warship and the destruction of their planet.

"The fourth lead is the great advancement in ability shown; going as he did from the use of a zone of force as an offensive weapon, up to the use of some weapon as yet unknown to us that works *through* defensive screens fully as powerful as any possible zone of force.

"Now, from the above hypotheses, we

are justified in concluding that Seaton succeeded in enlisting the help of some ultrapowerful allies in the Green System, on some planet other than Osnome——"

"Why? I don't quite follow you there," put in Loring.

"He didn't have this new stuff, whatever it is, when he met the battleship, or he would have used it instead of the dangerous, almost hand-to-hand fighting entailed by the use of a zone of force," DuQuesne declared flatly. "Therefore he got it some time after that, but before the big explosion; and you can take it from me that no one man worked out a thing that big in such a short space of time. It can't be done. He had help, and high-class help at that.

"The time factor is also an argument in favor of the idea that he got it somewhere in the Green System—he didn't have time to go anywhere else. Also, the logical thing for him to do would be to explore the Green System first, since it has a very large number of planets, many of which undoubtedly are inhabited by highly advanced races. Does that make it clearer?"

"I've got it straight so far," assented the aid.

"WE MUST plan our course of action in detail before we leave this spot," DuQuesne decided. "Then we will be ready to start back for the Green System, to find out who Seaton's friends were and to persuade them to give us all the dope they gave him. Now pin your ears back and listen to this, every word of it.

"We are not nearly as ready nor as well equipped as I thought we were—Seaton is about three laps ahead of us yet. Also, there is a lot more to psychology than I ever thought there was before I read those brains back there. Both of us had better get in training mentally to meet Seaton's

ing under our protection Chronus and Rhea, the emperor and empress of Atlantis. If you want war you shall have war."

"Search the square! Let no one escape, invisible or not!" yelled Poseidon.

The soldiers deployed in perfect formation, but they might as well have tried to catch smoke in a net. The Pharaoh had escaped.

And what is more, the inhabitants of Atlan, who had been taking this all in, despite the fact that they could not understand the words, had lost their attitude of reverence. The spell of our godhood was broken. Hell was about to pop.

MARS dispatched a company to the palace, which was a sizable marble structure peeping out from among sacred groves halfway up the mountain. It was deserted. While we had blustered, the royal family had departed.

Much as I hated to do so, as official reporter of the expedition I had to radio back to Mars the mistake which we had made. The message resulted in a sharp reprimand from the secretariat of the Anarchiat. Poseidon never recovered from the ignominy of this. As I have said, he had become seriously ill on the voyage to Earth. After the reproof had been received, he left the details of our defense to Zeus and Mars and took to his bed in one of the rooms of the palace. Three months later he was dead.

Now don't misunderstand me. Zeus is a fine fellow. The inheritance of the Pitarship didn't go to his head, and we remained the best of friends and drinking companions. The only difficulty is that when Zeus is in his cups he is so full of stories about his own love affairs that I can never get a word in edgewise about my own romantic entanglements.

But as Pitar he erred on the oppo-

site side from his dead brother. He treated the barbarians with the utmost consideration and gentleness. Naturally they didn't understand this after the iron rule of Chronus and Rhea, and we had our backs to the wall on numerous occasions during the months which followed.

Then Zeus lost no time in getting himself involved with a girl named Juno whom we had found alone in the palace when we invaded it on the day of our arrival. She claimed to be a princess, but court scandal has whispered for years that she was only a servant who saw opportunity knocking at the gates and dressed herself in her mistress' robes while the soldiers were breaking in.

Anyway she completely captivated Zeus with her plump, dark beauty and great cowlike eyes. In no time at all she had bewitched and married him. She was insanely jealous, of course, and started stirring up trouble at once.

By this time Plu-Toh-Ra had aroused most of the people of the Mediterranean basin against us. The Titans, as they called themselves, felt that we were usurping their right to live in mud huts, wear animal skins, and starve to death by the thousand during seasons of crop failure. The fact that we had started schools, and were introducing machinery and scientific agriculture, interested them not a whit. We had profaned their sacred groves and driven their emperor into exile. That was enough.

Of the ten kings of Atlantis, only Cadmus of Greece remained friendly. He was a simple, smiling soul, and his daughter was one of the most beautiful girls I have ever seen. Poor Semele! If it hadn't been for Zeus' fine figure and curly red hair and beard, perhaps I would have a different story to tell.

Cadmus was driven out of his kingdom by Plu-Toh-Ra's allies as soon as he refused to join them against us, so he, his daughter, and a few thousand

half-starved retainers marched to Atlan and threw themselves upon our protection.

Mars was glad to have recruits of any kind, of course, for reinforcements had not yet arrived from home. But King Cadmus got into his bad graces almost at once when, in trying to learn how to use one of our ray guns, he shot the general's best horse from under him and almost disintegrated the old boy himself.

And Semele got herself cordially hated by Juno by her open admiration for Zeus.

I tried to argue the little blue-eyed blonde out of what I could see was going to be a tragic love affair, not hesitating to emphasize my own attractions the while. But she merely smiled quaintly at me and shook her pretty head.

"You're a nice boy, Mercury," she said. "I like you. But the Pitar—I worship him. He's a man!"

Well, I knew then that things had gone too far for me to meddle and went back to help Vulcan and Hercules, our engineers, who were constructing a radio power station on top of Mount Olympus. This station, which they called Bab El, or the Thunderer, would, when completed, give us enough power to blow Plu-Toh-Ra to powder. But at present we were hard pressed to fight off his horde of barbarians, even though they were armed only with arrows and spears.

Cadmus was always hanging around the tower, asking fool questions and getting in everybody's way. He, poor fellow, had decided that we were making magic which would soon transform us into fire-breathing dragons or some such foolishness. Hercules was always stumbling over him in unexpected places, while little hunchbacked Vulcan wept and tore his hair every time that the Greek knocked over a test tube or tangled up our wiring. At last we had

to ask him politely to leave. To avoid hurting his feelings, we told him that the dragons were about to be loosed and that he might be eaten up by them.

THE BATTLE between Juno and Semele, however, was the thing which worried me most. Things came to a head one night at a banquet in the palace during which Semele sat with her eyes riveted on the Pitar, lost in worshipful admiration. During the meal Juno got more and more nervous, knocking over her glass of nectar, biting her nails, and then jumping up and sweeping from the room with as much dignity as her plump little person would permit.

Later I heard her laying down the law to her husband.

"Either that girl goes, or I do!" she shrieked. "I won't have a shepherdess mooning at my husband all the time."

"But, my dear," protested the Pitar. "She is the daughter of my guest and ally, King Cadmus. We need their support desperately just at present. Perhaps afterward— You know very well that she means nothing to me."

"And you need my support, too!" stormed Juno. "If I should go to the Pharaoh and tell how weak you are, with your ray guns almost used up and all that—"

"You do that and I'll break your neck; or, better yet, I'll have Vulcan build you a special room in the palace where I can lock you up when you have a tantrum," snorted the Pitar, whose patience was about exhausted.

Apparently this threat had its effect, for after that Juno treated Semele with honeyed sweetness. At the same time she developed a positive aversion for her husband, and several times I caught her looking at him in a way which gave me the creeps. If I had only known the vengeance she was plotting!

The planet Mars by this time was on the other side of the Sun from Earth,

and there wasn't the slightest chance of getting a supply ship through for at least a year. The allies had practically bottled us up in Atlan, and it was vitally necessary that we obtain a source of power at once.

For this reason Zeus ordered me and Hercules to take the space ship and go in search of a deposit of pitchblende from which we could extract the radioactive mineral, orichalcum, which alone could charge the generators at Bab El tower.

Our experiences on that expedition would fill a book. We headed south, flew high over Sais, the capital of Egypt, and buried ourselves in the African jungles where geological conditions seemed best for our purposes. I'll not bore you with our adventures which have little to do with the development of this tale. Suffice to say that we discovered a rich vein of ore near the place where the city of Sim-Bab-Wee later was built.

With our primitive tools it took three months to mine a shipload full of the stuff, so that I was completely out of touch with events at Atlan by the time we returned.

I could see as we approached that the expedition was in a bad way. The armies of our enemies were camped on the plain completely surrounding the city. Catapults and battering-rams were being built for an attack on the walls. That would all be changed, of course, as soon as we had orichalcum enough to recharge our guns. Provided that we were not overwhelmed and wiped out in the meantime.

But the situation at the palace was even more tense. The halls and porticos of that placid structure were simply seething with intrigue. Juno had become Semele's bosom friend, and was apparently intent on furthering her rival's love affair. Mars was going around like a bear with a sore head, muttering that the best defense was an

attack, but that Zeus was so fascinated by a pretty face that he had forgotten all about the war going on. Cadmus was still prattling about the dragons that we were soon to turn loose on our enemies, and Vulcan had worn himself to a shadow completing his power station.

I got the low-down from Apollo, the Pitar's secretary, as we were sipping nectar in one of the town's musty old taverns.

"I tell you, Mercury," said the handsome lad as soon as he had finished a couple of drinks, "there's a lot of funny things going on around here. Juno is positively urging Semele on to get Zeus to make a fool of himself. Why, the old boy has even got to thinking that he's some sort of god! And with all of us probably only a week away from the graveyard."

"Meaning what, exactly?"

"Plu-Toh-Ra has sent us an ultimatum that we must surrender within one week or he will attack the walls. We have only about ten charges left for each of the soldiers' ray guns. That should dispose of several thousand of our enemies, but after that we're through, because it will mean hand-to-hand fighting in which we will be outnumbered ten to one. Due to the difference in gravitation, our soldiers are no match for the Earthmen, whose muscles are accustomed to greater strains than ours."

Apollo ordered another drink and wept into it.

"And then I heard Juno talking to some one the other day," he went on. "But when I came into the room nobody was there. And I heard Vulcan complain that somebody or something has been prowling around Bab El. It's that damned Egyptian, I tell you. I'm in favor of getting on the ship and going home."

"Fine chance for that, with Mars behind the Sun and the ship's fuel tanks

almost empty. No. We've got to stay and fight."

WHEN I recovered from my hang-over the next day I decided that it was high time I took a hand in affairs. So I hurried up to Bab El where I found Vulcan dancing up and down in glee.

"I stopped him that time!" he chortled as he handed me a photograph which showed our old friend Plu-Toh-Ra entering the door of the power room. "I recalled that according to the old legends, the priests of Mu were able to make themselves invisible to ordinary light by the use of drugs. Well, after my laboratory had been ransacked on two occasions I flooded the place with ultraviolet light and rigged up a camera and ray gun operated by an electric eye. You see the result. How he escaped death, I don't know. But we'll be able to detect and catch him the next time he shows up."

"If he does show up, which isn't likely," I agreed. "Did he do any damage?"

"Not that I can discover. Just studied the layout. He must have considerable scientific knowledge. Of course he realizes that he is defeated as soon as we get the generators going, so I expect him to attack at once now, ultimatum or no ultimatum. Thank Heaven he seems unable to make his soldiers invisible."

"Have you got our long-range guns in position? Maybe there's enough orichalcum in the tanks of the ship to operate the generators."

"I thought of that, but it can't be done in time. There's only enough fuel for one flash, and that wouldn't even warm up the guns. Now, if we'd only thought of mining the plain outside the walls we might have used the power wave to explode them. It's too late for that, too. I guess we're finished."

I left Vulcan mumbling curses and walked back to the palace, pondering

over what he had said about mining the plain. Maybe it wasn't too late after all. I ran across King Cadmus on the way down. As usual he asked me when we would be ready to turn the dragons loose on our besiegers.

"Cadmus, old fellow, you're a genius!" I yelled.

His words had given me just the idea I had needed. I ran the rest of the way to the palace, dragging the king behind me.

I found Zeus sitting in his office telling Juno and Semele what an important man he was.

"Listen to this!" I commanded as soon as I got my breath. Then, turning to Cadmus: "Where did you get that story about the dragons?"

"Why, it is common knowledge among the Titans. They say that you are making the dragons to eat up the whole Mediterranean valley. Of course I know that they really are gentle dragons who will only kill your enemies. I tried to explain that, but Plu-Toh-Ra drove me out of Greece before I could make them understand." His funny little goat's face was all twisted up with earnestness.

"How would you like to slip out of the city and tell the Titans that the dragons are all dead? That we didn't make them right or something."

"Dead!" Woe overspread his face.

"Yes. Dead. I'll give you a sack of their teeth to prove it. These teeth have magic powers, though. Whoever has one of them in his possession cannot harm us. I want you to go out and sell them to the allied soldiers as souvenirs. Then, when they attack the city, we will walk out unscathed. See that every soldier wears one around his neck. You can tell them the teeth bring good luck or something."

"Why—why—yes! I'll say that I deserted. They'll believe me. I'm related by marriage to most of the nine other kings, so I won't be killed."

"Fine! Now run along and get ready to sneak through the lines. I'll see you to-night and give you the bag of teeth."

"What kind of a cock-and-bull yarn was that?" Zeus burst out when the king had shuffled out. He was rocking with laughter.

"Haden't we better talk alone?" I suggested.

Juno bristled, and the Pitar hastened to avert a scene.

"Not at all, not at all!" he said. "These girls know all my secrets. What's brewing in that crazy head of yours?"

"Just this: Those dragons' teeth will be duralite bombs with fuses which can be touched off by a radio-power wave flash from Bab El. We've just enough orichalcum to turn over the generators. We'll blow the allied army off the map. Maybe Cadmus can get Plu-Toh-Ra to wear one of the things, too. That would solve all of our problems. On second thought, though, I guess he'd better steer clear of the Pharaoh, who might get suspicious."

"But why tell Cadmus all that nonsense about dragons' teeth?"

"Because he's so dumb—excuse me, Semele, but I must talk frankly about your father—that he'd be sure to give himself away if we told him the truth. As it is, I believe that he can get every soldier to buy a tooth. Then, when the attack comes, Vulcan can pull the main power switch and, *poof*, away goes our enemy without knowing what hit them."

"Well, it sounds silly, but it might work," said the Pitar.

"I think it's wonderful!" cried Juno, jumping up and clapping her plump hands together.

I almost fell dead. Juno always had disliked and distrusted me, and those were the first words she had ever said in my favor.

"But," she hastened to add, "I think it should be my husband's privilege to

throw the switch. After all, he is leader of the expedition."

"But Vulcan built the tower," said Zeus, trying to be fair, although I could see that he would die rather than let any one else turn on the power.

"What do you think, sweet Semele?" purred Juno.

"Why, of course Zeus should do this thing, whatever it is. I do not quite understand all this about dragons and bombs, but if it is a way for the great Pitar to appear in all his glory, no one should stand in his way."

That settled it. Vulcan, Hercules, and I worked most of the night constructing bombs in the shape of the most frightful-looking molars that we could imagine. We made several molds and squeezed the things out by the thousand. This was comparatively easy since duralite is a doughy substance which hardens on contact with the air and is harmless unless detonated by a radio wave of just the right length. We had brought plenty of it from Mars.

THE NEXT morning Cadmus sneaked out of one of the smaller gates of the city before sunup to begin his work among the enemy.

Then I had a hunch. "Vulcan," I said, "can you rig up one of those ultraviolet lights above all the entrances to Juno's chambers? I don't trust that lady, and Apollo said he heard her talking to some one he couldn't see the other day."

The engineer looked at me shrewdly and set to work. We had some difficulty setting up the lights without being detected, but after that the Pitaress couldn't have talked to a ghost without our knowing it.

Next we transferred what little orichalcum remained in the lead fuel tanks of the space ship. That left us absolutely at the mercy of the Titans in case our scheme failed, but we had to take the chance. Then we waited until Cad-

mus should have had time to plant the magic teeth.

Plu-Toh-Ra must have got wind of something, however, although I am sure he could not have talked to or spied upon any one in the palace or the tower. Anyway, he launched his attack without warning on the morning of the third day.

We were warned by the crackling of the sentries' guns and hurried to the walls. Outside, the crude battering-rams, covered with green hides to protect them from being set on fire, were being pushed into position. Back of them the motley barbarian army was moving forward, the sunlight sparkling on their swords, chain armor, and spear points.

"Vulcan says he won't be ready to turn on the power until late afternoon," said Zeus, turning to Mars. "Can we hold them off until then?"

"Of course!" scoffed the general. "My men are spoiling for some blood-letting. Each one is worth ten of those ruffians." His face had lost its morose expression and was positively shining with eagerness.

But despite his confidence, the battle was one-sided almost from the start. Before our coming, Atlan had been a holy city, due to the fact that on Mount Olympus was situated the oracle of Uranus and Gæa, the Titan god and goddess of Heaven and Earth. Its crumbling old walls were not made to stand an offensive by twenty-five thousand men. The Titans knocked holes in them at will.

I should have been helping Vulcan, but I couldn't resist the temptation to get into the mêlée. Girding on a sword and seizing a gun, I went down to the main gate, where the fighting was hottest. Later I almost wished I hadn't. Despite the fact that we towered over the barbarians, we were not their equals in hand-to-hand fighting, due to the fact that our muscles were made for

the lighter gravitational pull of Mars.

Again and again I saw one of our gigantic soldiers hacked to pieces by what seemed to be an insignificant opponent.

By noon things looked bad indeed. Our guns were exhausted, and our depleted forces had been driven back to the base of the mountain.

I was engaged with a fur-clad heathen—to be honest, he was on the verge of carving out my liver—when a detail of the Pitar's private guard, which still had a few charges left in their guns, came to my rescue.

"Zeus says for you to stop mucking around down here and get back where you belong before you get killed," said the captain as soon as we had broken clear from a mob of yelling Titans. "Vulcan needs your help."

I was feeling pretty groggy as the result of a crack over the head, but I hurried up to the tower as fast as my wabby legs would carry me. There I found the engineer putting the last touches on his wiring.

"Haven't had time to test the thing," he said as he wiped one grease-smudged hand over his grimy face. "We'll have to stake everything on one throw of the dice. Where's Zeus?"

"Here I am!" boomed our leader as he appeared at the doorway of the power room. "I've been arranging for the defense of the palace. Is everything ready?"

"Everything's ready," answered Vulcan a trifle sourly.

I knew that he wanted to push down the big black-handled switch himself.

ZEUS threw back his scarlet cape with a magnificent gesture and stood forth in his shining war harness, every inch a ruler.

"Where are Juno and Semele?" I couldn't resist asking that.

"Juno's having hysterics in her room. Semele is taking care of her."

He glanced at me sharply, and his face flushed a little. His manner was considerably subdued as he stepped forward to grasp the switch.

"Wait, Zeus, wait!"

The three of us whirled as we heard this cry and the sound of running feet on the path outside.

"Don't touch that switch!"

It was Semele's voice. A moment later, wild-eyed and disheveled, but looking more beautiful than I had ever seen her, the girl hurled herself through the doorway.

"What's the matter, child?" Zeus caught her in his arms as she reeled and seemed about to faint. "Has the palace been taken?"

"No. Not yet. It's Juno! She says——" Semele gasped for breath.

"Says what, my dear?"

"She says—— Oh, she was jealous of me and wanted to kill you. She says—Plu-Toh-Ra did something—to the switch. Says if you close it—you will be killed."

"Nonsense!" Zeus patted the sobbing girl on the shoulder. "That barbarian knows nothing about such things."

"But he was in here!" cried Vulcan wildly. "I haven't had time to check. Maybe—— Wait! Let me look. Won't take ten minutes."

"Ten minutes will be too late."

I had glanced out of the window and seen that the palace below us was entirely surrounded by a tangled mass of fighting men, while at least a hundred skin-clad warriors were clambering up the path toward the tower.

Gently but firmly, Zeus tore Semele's clinging arms from about his neck and stepped forward. He was pale, but his hand did not falter as he reached upward toward the switch.

Then, before any of us could interfere, Semele leaped before him.

"I love you! I love you!" she cried.

"You must not die!"

With those words she grasped the handle and pulled it down.

There was a blinding flash of light, a rending explosion, then darkness.

When I recovered consciousness I was lying outside the door of the wrecked power house from which the blast must have hurled me. Beside me were Zeus and Vulcan, but of Semele there was no sign.

Scorched, bruised, and bleeding, I staggered to my feet. A quick examination convinced me that the others were only stunned. Then, dreading what I might see, I forced myself to look toward the palace.

Not fifty feet away lay a still-writhing mass of flesh which was all that remained of those who had been running toward the tower.

At the palace the clash of arms had been replaced by a deathlike silence, broken only by screams of agony. A few surviving barbarians were running toward the walls of the city as though the devil himself were after them.

Cadmus and his dragon's teeth had done their work well.

AND THAT is all of my story—or almost all.

During the rest of the day the barbarian army melted away across the plain, leaving arms, equipment, and siege engines in wild disarray.

But that night, as we stood surveying the ruins of Bab El under which poor Semele was buried, there came a great noise like the sound of wings above us, and a bundle fell out of the sky and rolled to our feet.

"You have defeated us this time, O men of Mars," snarled the harsh voice of Plu-Toh-Ra. "But we will come again. As a seal upon our promise, we give you this token."

The wings passed on.

Slowly the Pitar knelt and unwrapped the dripping package.

It contained the head of Cadmus.

Famine on Mars

*A unique novel of the spaceways.
You'll like this frank story of the
struggle of a race of men—to live*

Illustrated by M. Marchioni

I TURNED and threw my weight against the cover-lid that closed off the main body of the station disk from the passageway in which I stood. The round metal slab slipped in place, making a little clicking sound. Now I was cut away from the thousand small noises that were always within hearing inside the station. I was alone, looking over the edge of the void into space.

For a few seconds I remained still, holding my balance with difficulty, my body just inside the entrance to the long narrow corridor between the station and the signal tower. I felt a rush of nausea shimmer over me; as always when I stood here on the lip of the abyss I was seized by vertigo, shaken by a sensation of being forever falling.

Looking down, I seemed to plunge infinitely into the vast hole that was space. I was hemmed in on all sides by panels of glassite so perfectly transparent from within as to give the impression that there was nothing, nothing at all, between me and the aching emptiness of the void; through the thick walls of the runway the stars quivered like a million small bright fires, and the sky loomed around and above and below me as an endless pall of heavy black smoke.

I drew a quick, rasped breath into my lungs. How glorious to be a living thing in the midst of all this unstirred immensity! This was a spectacle and a pageant that could not fail to hold me fascinated, no matter how often I had seen it before. I had been serving as

signal operator NX-4 at the station for more than a year, Earth reckoning. Twice every twenty-four hours, measured by Earth time, I passed this way, going on shift and coming off; yet always while the spell lasted, it had power to stun me into silence.

The station seemed to hang in space like a giant's lantern, put here to light the void between the Earth and her satellite moon; no comparison could have been more true; without the constant ebb and flow of beam signals, relayed from Earth to Mars and back again, there could have been no traffic in the void.

This corridor of glass, slanting upward to the transmitter tower, was a bridge seemingly suspended in nothingness, flung out in airy periphery across the caverns of infinity. It was godlike to stand aloft at an elevation between the swinging worlds and send a glance with casual freedom across ten million airless miles and far beyond. The Earth turned in a measured creeping ellipse to one side, green and bulging at its middle, oddly like a ripe limefruit hung in the heavens, ready to be plucked. Standing there, I felt I could have reached out my fingers and jerked it down.

By contrast the nearer moon seemed small, shriveled and dead and old; a sour white grape on a black vine. Beyond was Mars.

Mars—he was old, with the polar caps round shiny spots on his bald pate. The caps were small this year, pin

by Frank K. Kelly



He was then completely enveloped by the gas screen he had thrown out from the belt. He was as if incased in a suit of mobile armor.

points of pale white against a crimson background; it seemed to me they had grown visibly smaller during my terms of service at the station, and they shrank in size with every summer. Each time the Sun's hot blaze melted the ice crusts and sent water gurgling through the framework of the canals, some moisture was lost upward into the thinning atmosphere, dissipated into free space. Life was hard on Mars.

I turned my eyes away presently, perforce shook off the grip of this ever-returning fascination. The spell that had taken hold on me, being woven of light stuff, snapped in a breath. I glanced at the small chronometer strapped to my right arm, noted that it was time for me to give relief to the man who had been on watch in the tower for six hours gone.

There was irony in the thought, in the consideration of time. Even out here, where there was no change through millenniums, where space and time were one and eternal among galaxied worlds, man had brought his instruments to measure out the creeping flow of his little life.

I SHRUGGED and climbed the runway that went upward at an angle toward the signal cabin. The tower poised above me like a stalking big-headed giant set in brooding fixity to watch over the flat disk surface of the station. The great transparent sphere that held the infra-beam projector was raised atop three great metal legs that formed a supporting tripod.

As I came slowly closer, I could see the narrow halo of luminous glare that hung about the glassite globe; this ragged gleaming was the only outward sign visible to the eye that gave evidence of the straining power that clicked back and forth between the planets from the relay circuits here.

At the far end of the passage in

which I walked stood a second huge round slab of dull metal, blocking off the runway. After I had passed this, and shut it behind me, I would be in a world set apart from the gray bulk of the station. I shoved my foot against a square plate in the floor of the corridor; the plug shifted on screwed threads, swung wide.

At first glance the big crystalline sphere seemed almost empty. That was far from the truth. There was no necessity for clamoring complex mechanisms here; giant strength was compressed at need in a small space and at need swiftly released. Directly opposite to where I now stood was a thin, tall cylinder, wrapped about by flat layers of racked coils through which a humming stream of power swiftly flowed.

The cylinder was transparent, with silvery gleaming electrodes inset at top and bottom; between the electrodes a yellow spark jumped back and forth, a chattering, prisoned thing. The slight buzzing as the activating catalyst entered the power conduits was the only mechanical sound in the room.

There was economy of space here as nowhere else in the station; yet, in the last analysis, all the ponderous machines that crowded the engine rooms in the lower section of the station, all the ranks of photo-cells packed in tight rows beneath the spread collecting mirrors, were in existence to build up, from solar radiation, the energy that was finally focused here and then flung out in space on a single tight beam.

This was the midway house between the Earth and the Moon and Mars; within the sphere all the messages that shifted from ship to ship across the void, from Earth to Moon and Moon to Earth and Mars to Moon and Moon to Mars, were caught and relayed here. The messages went silently and surely, invisible passengers riding carrier waves too short for reception by the retina of the human eye, traveling on

the station's transmitter beam deep into infinity.

NX-5, my relief, was on duty when I went in. His back was hunched, his shoulders formed the arc of an intent semicircle; something was coming through.

When I bent and touched him he gave no sign that he recognized my presence in the room; he sat very still, with a crouched intensity, pressing the translator tightly against his head.

Must be important, I thought. I waited with some eagerness for him to turn. The message he had been getting came to a close, and I knew when it was ended, but he didn't turn. There was no visible indication when the message ceased, of course, because reception was all in terms of the infra-beam and only intelligible to a wearer of the translating headgear, but I sensed the instant that it stopped.

Long ago I had learned the trick of watching the thin purple halo which clung about the condensing coils; when a message came in strong, the halo was agitated by a slight shimmering, when the signals faded, the halo paled. The difference in its gleam was so little that to any other than NX-5 and myself it could not have been noticed.

Suddenly NX-5 took the headgear off and got up. I felt abruptly tense. Something was very queer all at once. I expected him to grin and give the translator to me, but instead of handing it across, he laid it down very slowly in the control seat and stood heavily facing me.

THE WAY he looked was strange to my eyes. He had always been very dark, with a slight greenish cast to his skin and a thin brittle body so fragile in appearance that sometimes I had roused his mock anger by saying that he must have Martian blood in him to be so like a china cat. There were not many Martians on Earth, but I had seen a

few, and they were all like that—brittle and thin-eyed, and a brackish green of skin from the activating rays of their burning desert sun.

Something in the atmosphere made them that way. They had a cat's strength at their queer graceful sports, but they were thin-skinned and easily broken in body. It wasn't hard for an Earthman's blow to bring their yellow blood. They shattered easily, like china cats.

Something was bothering NX-5, I knew. I could always tell when he was stirred. We had been mates all during the year and more I had been at the station. We had been close. I looked straight at him.

"All right," I said. "Let's have it, whatever it is. I can read you plain, old son. Something's out of kilter."

"No," he insisted. "There hasn't been a thing come in since you went off shift last trick."

"Don't lie to me," I said, a little brusquely. "No need for that. I'm too old a hand to fall for guff. Out with it, straight!"

"No; it is nothing, I tell you," he said.

He halted, twisting his fingers together, a sure sign of his distress. It was a trick he had; a rather gruesome way of bending his fingers into a grotesque mass. He always had been terrifically limber; he could twist his body into unimaginable shapes. That was another Martian trait about him, and he admitted he'd learned it on Mars.

There were some who said that the Martians were made of live rubber, because they had that power of altering their own shapes. It was strange, that they could be so brittle of body and yet so malleable; rubber gave, instead of breaking; the Martians had a quick breaking point.

"You're hiding something," I said suddenly. "Nothing funny going on, is there?"

I stared at him. His eyes hit mine with blazing force. I felt a sudden uncontrollable desire to shiver.

Something in me whispered: "Look sharp!"

I experienced a deep revulsion of feeling. In that instant the relationship between us was changed around, and became all at once wrong end to. Before this moment we had been friends. It was impossible not to be drawn to the man; and I had been attracted. He had a curious restrained magnetism, as if he was always under a rigid self-control. He carried with him an aura of potential power. Beyond that, beyond some air of mystery that hung about him like a scent, he was very likable, and I had freely responded.

Martian or not, it made little difference to me then. I was not one to be too scrupulous of the race prejudice that was so strong on Earth. Out here in space you got a sort of different slant on things; you saw that all men were brothers, on whatever world they might be; little creatures on two legs, crawling and climbing upward toward the stars.

"You're not going to answer?" I demanded.

"I have answered."

"You're lying."

He looked at me with agony in his eyes. Yet I got the strong feeling that he had something big to do and that he was going to do it, even if he had to hurt me and a few others.

I sat down in the wide, comfortable operator's seat. I looked the keyboard over slowly, put my hand out toward the black release key. Then glanced up sidewise at NX-5, to where he was still standing as if not yet ready to begin doing what he had to do. It seemed to me that he had moved a little closer.

"I can get that message from the record tape," I said.

"Nothing there."

"You know what's there," I said. "I

still hate to believe you'd try to hold out on me. I'd like to get the dope from you."

He suddenly gave in. I could see it wasn't easy; the recession of blood from his face was clearly visible. He came as near to getting white as it was possible for him to get. The skin beneath his eyes turned a greenish gray, and his breath puffed in ragged bursts. His emotion reached me. I could suddenly understand then that it was something big that was troubling him.

I said: "You'd better talk, Five."

He smiled. "What will you do to me if I don't talk?"

"I'm giving you a chance. If you don't take it, I'll have to put you on the report. And I'll get the message from the tape, anyway."

"You will not find this message on the tape, Four."

I looked at him, almost stunned. "You mean—you broke tape before receiving?"

"Yes."

"What's this, Five?" I said. "What is it?"

He stared at me very soberly. "You are my friend, aren't you?"

I said: "Yes. Of course."

But just then I wasn't.

He pulled his shoulders back and lifted his big head. I gulped a breath. It was the first time I had seen him standing up straight; he'd always walked with an intent stoop. Now I knew what he had been attempting to hide, what the mystery had been about, what he really was, even almost word for word what he was going to say.

II.

IT WAS then I got my first good look at him. He was very tall, almost a head taller than myself, and I am over six feet and a half. His chest, expanded to the limit, was gigantic. It was like a stellite barrel, greenish and

glistening. The blood had returned to his face in a flood, and I saw how dark he was. He was green and black. He stood there like a dark statue, slightly tarnished.

"First I must tell you," he said. "I am from Mars."

"I know," I said. "I've thought so for quite some time."

"But you weren't sure. Nobody here at the station has been sure."

"That's true," I said. "But now I know, and they'll all know."

"If you tell them," he said.

"Why shouldn't I?"

"Does it make that much difference?" he asked.

I thought a minute.

"No; I don't suppose so. It makes no difference at least to me. I'm not one of those who thinks the shape of a man makes his superiority. I'll grant you your right to live."

"Thank you," he said, almost humbly. "You are my friend, but no man of Earth should be a friend of mine."

"Why not?"

His face was altogether different from what it had been a moment ago. It was touched by the premonitory shadow of a dark storm.

"I have been disloyal to myself and those I represent in revealing myself even this far. Yet I could not help it. You have been very free with me. I was always sure you would understand. Yet it was forbidden for me to make you my confidant. It is forbidden now."

"Who forbids it?" I demanded.

He blinked at me. "Friendship does not enter into this. There is no true friendship between us of Mars and you of Earth. There cannot be, while we have long and bitter memories."

"All justice is, of course, on your side," I said.

"I think so," he agreed quietly. "This hatred is not our doing. It has been forced on us. We have tried to un-

derstand you, but you have not tried to understand us. There never will be comradeship between us so long as you of Earth are bound to the slavery of the Combine."

I shifted uneasily. Like every other man of Earth who was willing to recognize the truth in the silence of his heart, I knew that the Martian was right and we were wrong, and yet it hurt to recognize these things. The Combine had ruled so long that it seemed almost sacrilege to admit that it might not always be in the right.

I was shaken by an inward struggle. I was torn by two distinct and separate wills. One was what had been born in me, what had been inextricably entangled in the structure of the germ cell from which I had been created; the other remembered all the long years on Earth when I, in common with every other Earthman and Earthwoman, had been flexed and shaped by the insistent pounding of the Combine; my brain had been conditioned to believe what it was desired that I should believe, and nothing beyond that. Yet there was a kernel of selfhood within me beyond the power of any outside force to change, and this something cried out against injustice and tyranny.

But it was a dim spark, a weak thing, a voice crying in the wilderness, and it lost the battle.

"Whatever is, is right," I said.

MY THROAT was harsh, burned by those words forced out of me by the power of directed habit. With my eyes I pleaded that NX-5 would understand. But mental scansion was not one of the Martian's abilities with the unaided mind, and he did not receive my unspoken message. He heard only the words I spoke.

"The Combine is right," I said. "You are wrong. You of Mars have rebelled against all order, against all reason, against all true citizens of the common-

wealth of men. It is you who have refused our friendship. It is you who have refused to bow to what is written in your destiny, to take your place as an inferior race. You must pay."

"I know," he said pityingly. "You learned that by rote. Haven't I heard your children chanting it at the conditioning schools: 'They must take their place as an inferior race——' I don't blame you for what you believe. It's not your fault. It's not your blindness. I am going to ask that you will sometime forgive what I am going to do now. I am forced to this."

"Stay away from me," I said. "I warn you, if you come any closer to me, I'll fight like hell."

"Listen," he said in a savage voice. "Let me tell you the story as I see it. You've been looking at the thing from one side all your life. You've never gone around in your mind and looked at the other side, because you're a little bit afraid of what you'd see."

"I'm not afraid," I said.

"Aren't you?" he said. "Then listen: The Combine has never forgotten and never forgiven the fact that the Mars colonists of twenty years ago were strong enough to rise and assert their independence of Earth's domination; there was no war, because open battle has not been a weapon of civilized man for the last five hundred years; there has even been no outward antagonism, but the hatred is there, under the surface. There have been so many little things.

"The Combine has never ceased to stir up bitterness against us. They withdrew all their water generators from the valleys of Mars, just when those valleys were fast springing up into the gardens they once had been, fast regaining the fertility and the beauty and the warm splendor that characterized them in the days of the old race.

"But the generators went, all at the same time, all without warning, without

giving us any chance to prepare; the Combine owned the secret, and the secret could not be revoked; they would not tell us how to make water from sand, but they gave licenses for the generators that we kept in our hands, and later those licenses were quietly revoked. None except the most trusted agents of the Combine had ever learned to operate those machines, nor did any know the details of their plans, nor *how* they worked, nor *why*. So there was no one left on Mars who knew the secret of creating clean water, and water we had to have if we were to live."

He gulped a breath, then let the air sing out of his lungs again. I could not take my eyes from his dark face. He went on:

"The first year after the generators were gone the valleys lost their splendor, the vegetation rioted and then fell again into dry red dust, and the dust broke into scarlet spores that filled the atmosphere in a giant cloud and choked the lungs of all creatures that had to go on taking in air, if they were to go on living."

He stopped.

I whispered: "And the second year?"

"The second year there was a drought more terrible than any other in the memory of the new race. Half the cities built by the ancient canals were left empty of their people. They died—unpleasant deaths—— The third year the population of Mars shrank from fifty millions to one million and a half; at this figure it was found that men could live, even on the little water there was left. The canals were cleared of debris, restored again after the lapse of empty centuries; the ghosts of the old race must have smiled when the great valleys echoed once more to the gurgle of water, as the ice caps melted and sent liquid streams circulating across their red world."

"And since then?" I asked hoarsely.

"Every year since there has been

less water in the canals, and the men of Mars have had less with which to wet their lips. We have heard that there have been some on Earth who have made protest against our slow crucifixion, who have called the death of all those millions that died with the plea for water on their lips, a blasphemy against the brotherhood of man. But not many. And you have done nothing—nothing.

"We have waited on Mars, thinking with every new year that surely you would throw off the yoke, that you would come to us and bind up our sore wounds and quench our thirst—Nothing. The Combine has always been too strong. And those who rule it have been so wise.

"You have learned what they have wanted you to learn; you have believed as they desire you to believe. The Combine has waited and watched, while Mars has been slowly dying; it was their secret thought that the day would come when Mars, when we of Mars, would crawl home begging for a little water—if any lived to return from a dead world. That day has come."

I stared at him. Then I asked slowly: "What do you mean?"

"Another drought."

"No!"

He nodded. "A drought, and worse than that," he said; his face went that dirty gray again, his hands clenched. "Worse than anything you could believe. There's no water left on Mars at all."

"That isn't true, Five," I said desperately. "I saw the shine of the polar caps when I was coming across the bridge to the tower. They were pretty small, yes, but plainly visible. There must be some water left."

He shrugged. "Of course—a little, a very little. Enough for a very delicate refinement of torture. So little that the bottoms of the canals are just barely wet, and men kill each other gladly to

lick the sweet mud where it has been damp, to eat the ground where it has turned to slime. There is famine on Mars. No water means no food. It is the worst hunger of all—the thirst for water. It comes on you—it comes on you like madness."

"That's what the message was about, then?" I asked. "From Mars, to, tell you?"

He said simply: "Yes."

THERE was a thick silence. My brain was cloudy and confused. The sharp struggle within me was repeated. This time I was not sure which side of me had won.

I muttered: "I've been thinking about what they must be going through out there. What must it be to endure?"

"I have felt that torture," he said. "Yes. I have gone without water for many days. It is worse than you think. You cannot imagine what it is until you have—known it."

I sat there; I couldn't move. I stared at the thin cylinder of the transmitter, watched the purple halo climbing over the stacked flat coils, caught the rapid flicker of the yellow spark leaping between the two electrodes. But I was not seeing the things that were before my eyes.

I saw a million dark faces convulsed by the same agony and torn by the same unspent desire—the lust for water. I saw men clawing with bruised hands into the muck of the canal bottoms, chewing slime for the moisture there was in it, sucking up filth and holding it in dry mouths to assuage the torment an instant longer.

I saw the wide bewildered eyes of soft-skinned women; I knew there would be great sacrifices, great loves, great tortures endured for the sake of easing the torture of some one who was held in reverence or in adoration. There would be pitiful things on Mars when

there was no more water at all—pitiful and terrible things.

Abruptly, a kind of madness seized me. I got up.

NX-5 looked at me. "What are you going to do?"

"There are two generators here," I said. "We've got to go to Mars, you and I and all of us here. We can take them the generators. They've got scientists who could analyze them; when they know how these two generators work, they can build more. This—this slaughter can't go on."

He shook his head. "I must do this alone. I shall probably fail. I have long ago given up any hope. But I must try, as others before me have tried, to break the grip the Combine holds over Mars. If I am beaten, I am ready to die. You are not of Mars. You do not want to die. I must do this thing alone."

"Alone?" I said. "You can't do it alone."

The change had come in me again. For a little while I had known the truth, and I had ruled my own brain; now I was in the grip of something stronger than my will.

"If I can't be with you, I'll be against you. You're my prisoner, Five. It might be better if you wouldn't try to fight."

The Martian put his hands on his big hips and threw his huge head back and laughed. I had counted on his doing that. His throat was exposed, his eyes were not on me; standing there loose-limbed, his head lifted at an angle, he was vulnerable to attack. I leaped, my hands reaching out for his neck.

With contemptuous speed he jerked around on the balls of his lithe feet. My fingers scraped past harmlessly; I lost my balance, stumbled, fell. I expected to feel him above me, crushing me. Nothing. I got up again, came at him. He had moved back two or three steps, and I remember his looking at me with

something like grave pity in his fine eyes.

He had something in his right hand that had not been there before. It was a small round thing like a bird's egg, blue in color with small white dots. He threw it toward me. It went up in the air in a winged arc, dropped at my feet, and burst. At the instant it struck I recognized what it was and jerked my body to one side.

I was not quick enough. The thin blue shell of the gas capsule broke with a brittle snapping, and let free the poison that curled in it. A tall jet of thick mist leaped up against my face, burning and moist like steam.

III.

THE VAPOR surrounded me and clung. It seemed to kiss my body as if there was some special attraction in me for it. It spread from my feet upward, moving with a soft, undulating motion.

Half a minute I stood there, paralyzed by the suddenness of the happening, wrapped about in the pale choking mist. My brain began to turn, and my vision blurred. Then came a sensation of falling and a shock of harsh contact as my body toppled to the floor.

I had fallen on my back. The Martian stood over me, a queer frozen glare in his eyes. I did not for an instant lose consciousness during this time, nor did I during the time that was to come. But I couldn't move. No matter how strongly I urged my muscles to respond, no matter how terrifically I struggled against the grip of the strange easy lethargy that now held me, it was of no use. Lying there shivering, I could understand how insects feel, captured and pinned mercilessly to a specimen case.

The thin film that had spread a mist over my eyes slowly vanished. Shortly I could see as well as I had ever been able to, hear as clearly, talk as plainly; but only the muscles around my jaw

and mouth were freed. Beyond my tongue, there was nothing that I had any power to move.

"You won't bring this off, Five," I said, staring up at his unblinking glare. "You can't do this to every man in the station. You've no one to help you, and there's ten of us all told. You're bound to lose."

The Martian twisted his lips into a queer little smile. "Am I?" he said. "Maybe you're right. But don't be too sure you know just what I've got in mind."

"I don't get it," I said. "You don't seriously mean you're going to try to knock out all of us here in the disk. You'll lose, anyway. If you're intending to take the station to Mars, I tell you it can't be done; not without a crew."

He put his head back again and laughed, this time with no fear that I could take advantage of the movement. I ached to fit my hands under the edge of his jaw; if it had been possible then, I would have killed the Martian where he stood and thought myself a cosmic hero. But it wasn't possible. He'd seen to that.

"I won't need a crew," he said. "I have no idea of taking the station all that distance—close to forty million miles. It's too slow, for one thing; there'd be too many on Mars who would die before I could get the disk there. It's simpler than that. I'll use Stillson. He's the Combine's representative at the station, isn't he? He'll come here, and I'll do to him what I did to you, and maybe a little more. I think he'll gladly tell me what it takes to build one of the generators."

I laughed at him. "What if he doesn't know? It's an even chance he won't. Maybe they don't trust even him with that. They don't trust anybody."

The Martian grinned. "No; but you see I've been working in the dark for a

long time, here and on the Earth, and I've found out a few things. Stillson knows, but he doesn't realize that he knows. It's a combination of hypnotism and forced telepathy. They've ordered him to wipe it from his conscious memory, and he's obeyed; but it's there in his brain, hidden away.

"It's got to be in him somewhere, or he couldn't change the set-up in the generator coils when something goes wrong. I've watched him make repairs. He goes at it like a sleepwalker, but he doesn't make any mistakes. He knows. I'll dig it out of him."

"Nothing you could do would make him talk. I've heard you of Mars are proficient in the art of torture, but there are a few people even torture won't touch. Stillson happens to be one of them."

THE MARTIAN smiled and bent soothingly toward me. He was holding something between his fingers; it flashed a tight beam of light into my eyes. I saw a thin circular plate of silvery metal, delicately perforated around the edges by millions of tiny openings. He began to turn it. I heard a low insistent humming in my ears. The disk seemed to leave his fingers, to rise slightly in the air, to hang suspended over nothingness.

Splashes of light rebounded from the reflecting surface of the metal, were split and broken in passage through the perforations. The small sparklings of divided light grew and united into a single narrow thread of terrific brightness. A mist covered my eyeballs; tears rose in them, took shape, altered form, then dissolved again. The thread of light became a brilliant needle penetrating into my brain, fingering its delicate way to the deepest caverns of unconsciousness.

"What do you think now?" the Martian whispered.

I looked up, bright-eyed. My vision

had never been so clear, so keen, so sure. My antagonism toward the green-skinned man was altogether gone. I had more than strong faith that his way was the right way. I knew.

"I've changed my mind," I said. "I see now that it might be possible, if you can get him to come here."

The bright disk had vanished, and I had forgotten already that I had ever seen it. I waited for the words of NX-5.

"He'll come," the Martian said softly. He glanced at me. "Effect of that gas I gave you is wearing off. In a minute or two you'll be all right again. Then I want you to stand here beside me when I use the direct C-tube. Stillson may want to ask you a few questions. You'll answer. Understand?"

"Yes," I said.

NX-5 went over to the communicator tube. It was a round, screened opening in the glassite wall, connecting with all the compartments of the station disk. It was used for audible transmission and reception only; it was old-fashioned and unreliable. Every year the director was going to change it in favor of a more modern system of visi-plates, but so far he had never given the order. Queer to think now what a difference it might have made if the director had given the order! What changes might have resulted in the destinies of Mars and Earth if Stillson could have seen the face of NX-5 while he was talking to him. But he did not.

"You'd better put the call in," the Martian whispered, when I had got unsteadily to my feet. "He'll listen to you."

"Yes," I said.

I put my mouth close to the opening, picked up the headphones for receiving the answer that would come from the other end of the tube.

"NX-4, calling from the tower. Calling from the tower. Get me connection with Representative Stillson."

The sleepy voice of a switchman came echoing through the tube to me: "What do you want, Four?"

I looked at the Martian. The dark-green face was very close, the little muscles of the brittle jaw tightened and intent.

I said: "Message from Earth for the representative. In RX code. He's got to come here and receive it personally. I'm to get his stylograph signature."

The switchman awakened to alertness: "Right! Connect you straight through."

ANOTHER voice came on.

"Stillson?" I asked.

When he spoke, I knew that it could be no other; the words came with a lash, snapping and stinging like little whips:

"Yes. Stillson talking."

"Message here from Earth for you, representative. RX code. From the Combine."

"Who caught it?"

"NX-5, sir."

"Five gone off shift?"

"No, sir. He's here with me. He thought it was that important. He says the message calls for your stylograph signature."

"All right. Bring it over the bridge and I'll sign for it."

"Sorry, sir, but I can't do that."

I sensed the instant change in his voice. Suspicion was there at once.

"Why not?"

I glanced at NX-5. I didn't know the answer to that one. But the Martian did. He never hesitated. He formed words with his lips, and I read them off mechanically, my brain numb and unresisting to his will:

"It has to go on the tape, sir. You've got to countersign it here for the record. That was the word from Earth, sir."

"You don't know what was in it?"

"No, sir. It was in three-wave signals."

"I'll be over," Stillson snapped. "I'll

bring the director along with me. If it's that important, it might be something big. You haven't heard any trouble signals from the tycho transmitter?"

"No, sir. The Moon is quiet, sir."

"Nothing from Mars?"

"Nothing from Mars, sir."

I believe he must have heard me pull in my breath a little raggedly.

He said, his voice sharp and rasping: "Let me talk to NX-5. I want to check this up. Put Five on at once."

"Yes, sir," I said.

The Martian took the headphones from me, stood with his thin, bloodless lips almost touching the mouthpiece. He grinned narrowly and whispered: "Five speaking."

"You caught this message?"

"It came in about ten minutes ago, sir, from the Earth central. Urgent."

"Well, I'll come across the bridge," Stillson said. "I'll get hold of the director, and we'll come as soon as we can."

"I don't think the director is necessary, sir. The message seems to call for you only."

The wariness in the other's voice grew a little stronger. The Martian seemed to sense that he had made a mistake.

Stillson growled: "Damned funny!"

"Yes, sir."

"The director is coming along," Stillson said savagely.

"If you think it necessary, sir."

"You've made all this sound terrifically important. Are you trying to back down?"

The Martian clicked his teeth. "No, sir."

Stillson said: "The director and I shall be there in five minutes. Don't attempt to fool with that code. And I warn you, if you've tried to translate it, I'll know."

"I understand, sir."

"Cut off."

They broke connection. The Martian

hung the headphones in their niche in the wall and turned. His eyes went into me with the cutting edge of a bright sword.

"You'll do exactly as I command you, from here on. Have you understood?"

"I have understood."

I had no more volition of my own now than any robot; I was his creature and existed to do his bidding.

"You will stand by the wall there," the Martian said, "at the point where the cover-plate comes back when it is opened. As Stillson and the director come in, you'll wait for the last man to enter the room, no matter which one it is. You'll go at him from behind and put him out. Whatever you have to do, you'll put him out. Remember."

"I will remember."

IV.

IT WAS a long wait, standing against the glassite wall. It seemed millenniums longer than the five minutes Stillson had mentioned. Yet standing there as I was, with arms folded, I could look straight down at the square metal face of my wrist chronometer, and I knew the seconds were rapidly passing.

NX-5 took his place with his feet widely braced in the middle of the room. He swept a single keen glance around the interior of the great rectangle within a sphere. Except for the yellow glare from the infra-beam cylinder, the purple halo that played incessantly over the coils, the clicking hum that came from the in-leading power drains, the room might have seemed a quiet experimental laboratory in some far corner of the Earth.

I heard the soft clang as the round cover-lid at the station end of the runway was opened and closed. I heard the footsteps of two men slowly approaching, one walking a little faster than the other, in clipped, impatient

leaps. I knew that was Stillson. The other would be the director; a tall, jovial man, heavy of body, with a square whimsical face, weak blue eyes, thick white hair.

The circular slab of the cover-plate at this end of the runway began to turn on screwed threads. I felt my body knotting up into a taut bundle; muscles tight, arms and legs flattened against the wall, I watched the heavy chunk of metal swing toward me. It came to rest against me. I listened while Stillson and the director walked briskly on into the room.

Then I released my arms, shoved the great plate away from my body. I sprang free and leaped at the director.

The director was standing with his back toward me, one hand slowly sliding down to the linked chain belt around his waist, reaching for the only weapon that should have been on the station—his heavy air gun, the sign of his directorship.

But the Martian had put his limber fingers into the fold of his green tunic and brought out something deadlier; even as I sprang on the director's shoulders I saw NX-5 swing his arm in a swift short curve and glimpsed a blue-and-white capsule falling at Stillson's feet.

The director curled under the weight of my body. Before he could straighten I struck him twice across the back of the neck; he groaned, jerked his head, and then didn't move any more. I got up, expecting to see Stillson prostrate on the floor of the sphere, with the Martian over him.

But the representative had come prepared. He was wearing a gleaming metal sheath around his middle. As the Martian lifted an arm and tossed the gas capsule at his feet, his fingers had brushed a round black knob at the point of one of the spikes on the belt. The ends of the spikes seemed to expand, to open outward like shining metal flowers

blooming; mist puffed up through a hundred tiny openings, surrounded the wearer of the belt in an amber aura.

The vapor from the capsule climbed to meet the downflow of the yellow gas. They met, joined hissing, melted together; there was a slight steam, and then the vapor from the capsule condensed to liquid, ran down Stillson's legs to the floor. It formed there in two little pools of black fluid, exuding heavy smoke.

Stillson was then completely enveloped by the gas screen he had thrown out from the belt; even the bottoms of his feet and the top of his head were thus surrounded. He tripped toward the Martian, moving his legs in a low, shuffling rhythm, as if slightly impeded by the yellow fog through which he waded and floated. Yet he could move and move with easy speed.

AT EVERY step he took I expected to see him topple and fall in a tangled heap, because there was nothing solid below him on which to walk; he was treading on impalpable amber gas, and as he shifted forward the gas rolled with him, clinging tightly to his body. He seemed to be incased in a suit of mobile armor.

The Martian stood staring. He made no effort to stop the Earthman's progress. When within about three feet of the Martian, Stillson halted.

I heard his voice, muffled and somehow distorted by passage through the yellow fog, yet clear enough for ample understanding.

"Checkmate, Five," the representative said, gently smiling. "I thought something was damned funny. There is nothing known that will break through this screen. Your Martian chemists haven't yet heard of its existence."

"Yes," the Martian whispered. "You've kept that secret, at least."

Stillson nodded. "Well, you've had your try, and you've failed. Turn over

all the weapons you've got on you. Throw them here at my feet."

The green man stood with his shoulders slumped and his head lowered. He looked up, heaviness in his eyes. "I am beaten."

Slowly his hands went into the folds of his tunic and came out with two others of the blue-and-white capsules. He stared down at them for a minute of hesitation, then with a gesture of despair shoved them away from him.

They rose, dropped, struck, burst, were absorbed and dissolved by the amber fog. Stillson stood completely encircled by a ring of the steaming black fluid. He gave no notice. He was still narrowly watching the green man.

"You had a heat projector."

"Do you know everything?" the Martian cried.

He threw a little metal cylinder across the floor. It landed near a pool of dark liquid, striking with a brisk clang. Stillson's eyes brightened. For an instant he lost his infinite caution. He bent and reached a hand out through the yellow curtain that surrounded him, picked up the projector.

Something sprang through the air and coiled in a golden rope across the Earthman's fingers; the glowing coil contracted, cut into Stillson's flesh. It gleamed and burned with a steady flame. Where it touched, a charred wound came and grew in depth.

NX-5 laughed. He held a second metal cylinder in his fingers, and his hand covered the activating stud.

"Break up your screen," the green man said, "or you're going to lose your hand."

Stillson didn't speak. All the muscles of the Earthman's face were leaping and jerking with the screaming torment that crawled up to his brain from his dissolving fingers, but he would yield nothing. Sweat broke like rain over his body and spattered on the floor. Yet he didn't speak, didn't move, didn't relax

the golden glow of the gas screen.

The green man narrowed the diameter of the flame circle. Very slowly and deliberately the hot sparks chewed into Stillson's fingers, creeping closer to the instant when the two split arcs of the circle would join as one and leave the Earthman's hand a molten blob on the floor of the sphere.

The Martian relaxed the pressure for an instant. He said quietly: "You've got a chance to save your hand. What's the answer?"

Stillson bellowed "No!" and flung himself unexpectedly backward in a great leap. His body turned end over end. He dropped on his feet with an acrobatic twist, landing like a cat. For just a second while he was in the air, the gas screen went off; but as he came down again close by the cover-lid of the runway, the cushion of mist had wrapped his body close. And he was free of the Martian's heat coil.

"You lose, friend," Stillson called ironically. He turned and vanished with a shuffle into the runway.

"Not yet," the green man whispered.

He stooped. His fingers flicked over the heels of his boots. He was shod in heavy metal-fabric shoes, with curious white projections at the ends, curved and hooked like ancient riding spurs.

He straightened, feet almost touching, ankles held close together. He began to hop forward, both legs pumping at the same time in a queer rhythm, as if he were bound by chains. But I understood what was happening.

He was wearing rocket boots. Inside the metal-fabric sheath, under the white jutting spurs, were repulsion batteries, stored with immense energy, released now at his touch. At every leap pale lines of luminous glow trailed out behind him in sparkling streamers, shoving him upward and onward.

He disappeared after Stillson into the runway, with that grotesque hopping and skipping. I stood a minute, hesi-

tant, glancing around me. The room was very quiet. The director lay where he had fallen, motionless, body crumpled. I was confused. My mind was vague. I had no orders. The green man had gone, expecting me to follow.

I ran forward. Breath pumped into my lungs, was driven out, came again, pounding in my throat. I ran faster than I had ever done before, but I could not gain on Stillson and the green man.

THAT must have been the queerest race ever run under the pale mocking eyes of those white stars. Stillson had the advantage of his slight lead. Yet in his haste he had not taken time to close and seal the station end of the runway, and the Martian must have gone through in one tremendous jump. I came after.

The runway dovetailed into the ends of the two central corridors of the disk. The station was split across the middle into two equal arcs; one corridor curved in a sweep to the right, the other swung to the left.

I saw NX-5. He had stopped, again in the baffled melancholy he had assumed once before, his head slumped between his thin shoulders, his brittle body in a shambling pose. I closed the gap between us.

He glared at me, eyes shuttling back and forth in their narrow sockets like wild things. "If I knew which way he's gone! He is heading for the outside E-lock. He means to take a ship and go to the Combine on Earth. If he reaches Earth, they'll have a warning. If I knew which way he's gone! I could still get to the E-lock first, I've the better speed."

He cried out in some unintelligible gibberish, swinging his dark hands. I stared over his shoulder. The corridor beyond him, that taking the left swing around the disk, was faintly luminous with amber gas.

I was still under the magnetic influence of the green man. I pointed.

"What's that?"

"Where?" he said, turning on me fiercely.

"To the left there," I said. "Yellow stuff, see? Gas. He went that way. He's left his trail."

The Martian threw his breath out in a huge explosive burst and was gone. He went so swiftly that I could only stand an instant, blinking and stunned by that blazing speed. It was almost as if he had worn wings.

I hurried in the path he had taken. I was near to dropping from exhaustion, but an impulse more powerful than weariness had taken command of me. I wanted to be in at the death, if death there was.

The disk seemed to be deserted here. The doors on either side of me as I sped along were closed and locked, and no light seeped under their sills into the corridor. The corridor stretched before me, empty and echoing to the hollow *slap-slap* of my running feet; metal floor and metal ceiling were alike to the pitiless glare of dead-white light. I thought, the Martian must have drugged the rest of the crew, some way—sleep gas in the ventilators. It was possible. Knowing what I knew now, it seemed a certainty. But I couldn't stop to ponder.

I rounded the sloping curve of the far side of the corridor as it began to swing inward again, and there were Stillson and the green man, locked in combat. I halted and watched, with awe and fear and a little trembling. Had I interfered on either side, I should have been impatiently slaughtered.

This was a battle of controlled forces and insensate energies. I had sensed that from the beginning, but it was made plain to me now. All the ruthless strength that stood up and hurled defiance to the universe in the name of the Combine was distilled in essence into

the lean tigerish figure of Stillson the representative; the gaunt courage of the Martian colony struggling against thirst and despair gleamed in the eyes of the green man. It seemed to me the outcome must inevitably be the annihilation of both. Neither would yield.

But I was wrong. Stillson yielded. If it had been only his personal safety at stake, Stillson would have remained and fought until dead. But he carried a warning, and he must live to reach the Earth. And yet the green man had the greater stake in the battle—the lives of the million slowly dying on parched Mars.

The Martian held the heat projector in his hand; knifing white-hot sparks leaped from the end of the little metal tube to meet the mantle of gas that covered Stillson's body. Where the sparks struck, coruscating bubbles flashed and danced, but there seemed nothing that could penetrate the amber cloak of luminous mist.

The Martian widened the focus of the heat beams: flame-worms crawled and burrowed into the silky surface of the gas, and suddenly I could see a slight change in its texture, a slow yielding to the Martian's hurled heat, a heavy back-firing that began as a greenish luminescent scum and steadily thickened. It looked then as if the Martian had victory in his hand.

But I counted on Stillson's remaining to carry on the fight. Until it happened, I couldn't believe that Stillson would sacrifice personal courage to what he conceived as a greater good.

Yet it was so. He backed doggedly away, one hand fumbling out behind him for the grip of the little wheel that controlled the outside emergency air lock. Through the half-transparent glassite behind him I could glimpse the dull gray shape of a two-man rocket cylinder. It was the escape ship always kept there, propulsive units charged and ready.

With a quick jerk, Stillson spun the wheel. The inside panel of the lock leaped open, half protecting him from the Martian's onslaught; the hot tongs of the heat beams rattled and clashed on the heavy surface of the lock door.

Stillson slipped inside, the panel closing with him automatically. I watched him hurry to the escape ship, open a plate in the side, and hurl himself within. The little ship was barely big enough to hold two men. First his feet disappeared, then his legs, last his head and shoulders. But for a long time after I could not see his body at all, the memory of his mocking smile hung in the air before me.

V.

I THOUGHT the green man would go mad. He kicked and beat on the door, forgetting the wheel, forgetting the terrible weapon in his hand, that given another instant would have cut through the stellite sheath as if it had been gray water. At last I pulled him away from the lock door.

He swung on me. "Why didn't you do something? You saw him slipping away. From where you stood, you could have got at him."

I stared at him, showed my empty hands. "How? And what with? You've given me no weapon."

He hunkered down on the floor a minute, fingers covering his dark convulsed face, his body rocking on his heels. Suddenly he stood up, shrugged.

"That's so. Forgot you weren't armed. Should have given you an H-projector. My fault."

His eyes burned. "Well, we've got to work fast; that's all. It's not likely I'll succeed now; it's pretty certain he's beaten me. But I can't quit yet. I've got to keep thinking there's still a million people out there—a million with nothing to drink. Dying for a little

water. I'll need you, Four. You've got to help me."

"Of course!" I said, but hesitantly.

Some of his dominance over me had worn off. It was like a drug; the effect didn't last. I was not so sure now as I had been a minute ago that he was right, that the Combine was wrong.

Abruptly he put his big hands on my shoulders and shoved me around to face him. He stabbed with his eyes deep into my brain. I could almost feel him plucking out my thoughts and dismembering them as if they had been live things.

"You're going to help me, because you've got to help me," he said. "Because it is my will."

His voice was soft, smooth, but overwhelming. It hit me like a wave, and I sank down in it with the roar of mental surf in my ears.

"I'll help you," I said stiffly. "Where do you want to begin?"

He began to walk back along the corridor toward the signal tower. The energy charges in his racing boots were exhausted, and he swung his thin legs forward in long, catlike strides. After the terrific strain of the mad race we had gone through, the pace he set now was easy for me. I kept close by his side, glancing now and again at the blank surfaces of the doors we passed.

I demanded, suddenly: "What about the crew? What have you done to them?"

He laughed, a harsh, short, metallic burst of sound. "You needn't worry. It's only sleep gas in the ventilators. They won't wake for another six hours."

"Six hours?" I muttered. "You won't have much time to do whatever it is you're going to do. In six hours Stillson will be on his way back with a squadron from the Earth fleet."

"I know," he said. He lengthened his stride. "I told you it was a long chance. But Stillson has made a mis-

take. I have been trying to keep from taking the lives of your people. Now it may be necessary for a few good men to die."

I halted, shivering. "Murder?"

"No more murder than what is happening to my people."

"I tell you I won't kill. Not for you or any other."

"Sometimes," he whispered, "sometimes it is necessary that a few die in order that many may live. Do you understand?"

"No."

We were walking again.

He grinned. "You'll see. You'll see, in just a little while. It won't be pleasant. But then dying of thirst isn't—pleasant—— Stillson has made things hard."

We stopped at the end of the corridor. The Martian swung his head completely around on his neck, in a grotesque swiveling motion, as if suspicious of something, but nothing was changed in any way from what it had been when we had passed here before. He sent me ahead of him as we entered the runway. It was not that he was afraid; it was simply that his own one life was worth too much to his cause to be risked now for any reason.

The director lay where I had left him. His body seemed to have a curious immobility about it, as if it had been frozen. I went over and touched him with my foot. He didn't move.

I tore a button from my tunic, brushed it once or twice across my sleeve. It gleamed. Bending, I straightened the director's arms, with some difficulty because he was very rigid and hard, and holding his head up with one hand, I put the button close to his nostrils first and then to his lips. It came away with its shining smooth surface unblurred. No breath.

I GOT UP, feeling very sick. The Martian had closed the cover-lid leading

to the runway and was coming stealthily across the room. I waited, glaring.

He stopped. "What's wrong?"

I touched the director with my foot. "He isn't breathing," I said with a sob.

"Did you hit him the way I told you?"

"Yes. He was breathing when Stillson ran out."

The green man gurgled a sour laugh. I got back my hope. If he could laugh, there was something here that I did not know, that made what I had spoken seem to him ridiculous.

"He's not dead," the Martian said. "He's had a little of what you had, only a bigger dose. He's been lying next to that pool of liquefied gas, and it's been evaporated; he'll come out of it in six hours. He won't breathe a minute before, no matter what you do. But we're wasting time. We've got things to do."

"All right," I said. "You think you can beat Stillson, beat Earth, beat all of us here at the station. What makes you so sure?"

He swung his big head from side to side on his neck, in an impatient motion. Abruptly I saw the dust of despair settling in his eyes, and for the first time I came to an awakening of how really desperate he was. Alone, fighting single-handed, millions of miles from his own kind, cut off from all help except what he wrenched unwillingly through force, he struggled against odds so overwhelming that to any other man they would have brought acknowledgment of defeat. Yet still he fought.

"I'm not sure," the Martian said. "I'm pretty sure I won't do it. But I've got to try. Enough of that. The first thing we've got to do is to build up the beam for long-distance transmission. I'm going to take every ounce of power we've got. There'll be no relay to carry this message. It's got to reach straight through."

"Can't be done," I said. "How about the station on the other side of the

Moon? How about the midway station on the Mars run? You can't get by them. They'd throw a blanket interference shield all over you."

He stared at me, a queer film forming over his eyes. Then he said slowly: "If those stations are wiped out, I can get through."

"Yes," I said, stunned.

"Now you're going to talk about being civilized," he said, in the same soft voice. "When it comes to this, I'm not civilized. I'm no more civilized right now than an ape from your jungles. And I'm glad. I'll kill, and I'll pride in the killing."

I couldn't move or speak. His eyes held mine; they were gigantic; little flecks of fire lay deep in them, glowing with a tremendous hot force that dug into me like a shower of spears, closed over me like a net, and held me tighter the more I struggled. His mentality was greater than mine, and his was the victory. I yielded. There was nothing else I could have done, except give in.

"We'll start," he said. "Where is the mounted projector?"

"Projector?" I said. "I don't know."

He growled: "The disk is armed. At least, they call it that. There's an old E-type flame-thrower somewhere."

I told him where it was. He listened, unrelaxed, his body still all one taut bundle of nerves and wound-up muscles, his brows knotted into a black line on his dark brow.

At last he nodded, stood rubbing his chin with two long green fingers. Looking at him, I thought I could see a faint luminous aura expelled from his body, like phosphoric sweat. It was the Martian halo.

Deep into me then went realization of the difference between us, between Earthman and Martian. Related, connected, shaped out of the same hot stuff thrown from the Sun—that we were, but no more. In thought, in heart, in body and brain, there was a gulf wide

open between us across which no bridge could be flung.

The Martian said: "You'll stay here and build a set-up on the board that will reach from the disk to Korna-on-Mars. That's your job. Remember; no reserve. Take all the power you can get. Drain the cells."

Without another glance at me, he turned and walked into the runway.

I called after him: "Where are you going?"

"To find that projector," he said, his voice echoing. "The left corridor, halfway around the disk. In an alcove—that's what you told me, wasn't it?"

"Yes," I said. "So you're really going to do this thing?"

His voice came back, very faint and yet strong. "I am."

The sound of his footsteps died out. He was already out of sight. I was alone, except for the chilled motionless body of the director.

I TURNED, went to the keyboard of the beam, and sat down. What I did then, I did mechanically; I knew every possible combination of the keys as well as I knew the lines in the palm of my hand. I began to set up the long-distance terminals next to the guide posts. The hiss of the receptor tube graduated downward into silence; the broadcast central responded when I opened the key, made a soft chuckling whisper.

The coming of it was noiseless and invisible, a smooth swift flow of energy along the curved, gleaming sides of the conduit coils, but I thought I could hear the power pouring into the reservoir cells behind the board, and the sound of it was oddly menacing and evil. For a minute I sat hesitant, almost took my hands from the keys, almost tore the terminal plugs away from their sockets; the impulse passed, and I went on.

After what seemed a long while I heard the Martian's catlike steps behind

me. He came in, his face furrowed and wrinkled as if torn by indecision, his eyes heavy with weariness.

He checked the arrangement of the keyboard almost without interest. He nodded, touched my arm.

"All right, that will do. Come with me now. We can't send off the message until the projector has done its work. I'll need you to do the loading."

With both hands, I took a grip on the metal edge of the keyboard. I huddled against the seat. "Not going." I got the words out of a stiff throat.

"Yes; you are going," he said softly.

"I won't have any part in murdering two hundred men. They're my own kind."

"What about the million on Mars?" he said, very low. "They're my kind."

"Didn't think of that," I said.

"Follow," he said then, and I followed.

We went through the runway a second time, back around the curved edge of the disk, till we came to the room that I knew, a little crucible set off by itself from the rest of the station, jutting out in a bulge into the void. The door was open, a light gleaming. We went in.

"This it?" he asked.

"Yes," I said. "You found it, all right."

My eyes took in the sight of the projector. It was a good deal like the old-time guns. It was braced in the snug grip of a recoil-carriage, a long gray snout of a thing, open-mouthed and grim of line. There were wheels and luminous dials around the balanced end of the long, thin, firing-barrel, and I saw the silvery, snakelike form of a power hose leading into the base of the supporting tripod.

Against one wall of the room swung two hampers, metal-fabric nets sagging with the weight of green projectiles. The hamper closer to me held small

cylinder-shaped missiles, the other beyond, huge blunt objects of gray and green.

"Do you know anything about handling an H-type?" the Martian asked slowly. He went to the projector and fingered a small spoked wheel. "Have you ever fired one, or seen one fired?"

"No," I said. "This room was always kept locked. This is the first time I've ever been in here."

He bent down. His uncanny hands went delicately skipping here and there over the mechanism of the firing slot. He twisted two huge wheels, something dimly clicked and responded.

"No matter," he said, as if to himself. "I'll only need you to shove the shells home. They aren't heavy, even the biggest. This thing should have an automatic feeder, but it's an old type. It's good the range I have to make is only half the Mars distance. This wouldn't reach much beyond."

"If it had the right acceleration," I said slowly, "I don't see why not. The momentum would carry the shell on."

I stood there an instant, stunned. The room seemed to expand and brighten till the light above my head was like a second sun, flowering with flame.

My voice burst out of me in a rush: "Thought of something. No need for you to kill all those men. You can dismantle the generator here, pack it into one of the big shells, and fire it at Mars. I'd send a message to Korna to look out for a bright object in space, Mars-bound, that might be a new comet or a meteor. I could make Korna understand, and the stations between here and Mars wouldn't suspect a thing. They'd relay the warning through. I'm sure I could get them to do that. Then, when we had connection on a tight beam, you could come on, and Korna would know what was going to happen."

The green man shifted his body around, head turned, eyes warily fixed

on me. He grinned like a contemptuous cat. "This old heater hasn't got the juice to carry that far. There's too many angles where somebody could make a mistake. The stations might get wise and ray the shell. I can't take a chance on any mistakes, understand."

I whispered: "Then you won't give it a try?"

"No; I won't," he said. His voice was harsh. "Can't waste any more time arguing with you. Get over here. Give me one of those little shells. They ought to be enough——"

VI.

I MOVED blindly as he commanded. I went over and picked up one of the little shining cylinders and, carrying it gingerly, brought it across to him. He put both his hands on the control mechanism of the projector. Something hummed. The big end of the firing barrel began to split open along a notched groove the same length as the fire shell I was holding.

The Martian's head was bent, his broad back toward me. I could see the bulge of hard flesh at the base of his neck, where his shoulders joined. He was eight feet away. Two jumps. Then my hands around his throat, squeezing——

He spoke suddenly, without turning. "Shove the shell in," the green man said. "Close the block and stand away. Sometimes there's a backlash."

I listened with one half of my brain. Two jumps, and my fingers would be digging into his neck. Better one murder than two hundred. Better one man should die here than that all those others in space should walk without warning into the embrace of death.

I lifted the little gleaming thing in my hands, fitted it into the end of the breechblock. The two halves of the fire chamber began to come together again, shaping snugly in a curve around the

shell. It thumbed a stud. The sides of the block swung in, touched, and I heard a sound sharp and brief, like a clock ticking.

"Ready," I said.

The Martian heard the ticking at the same time I did. Still holding the balance wheel in his right hand, he reached out with his left to pull the release down into the firing slot.

I could see over the green man's shoulder. I could see everything that he saw, and more. On the little grid plate above his head was mirrored the black sweep of the sky, the round sphere of the Moon, the pin-point brilliances of Mars and Jupiter; and beyond the edge of the Moon lay a tiny bright speck that was the Moon-to-Mars relay station. That was what the Martian saw.

I saw more. I glimpsed the faces of the hundred men inside that huge metal disk, the faces of men I knew, who had been friends with me, who were born of Earth as I was of Earth. And then I caught the gleam of a bright arrow curving across the void, striking, exploding, shattering. Insatiable flame burning a hole in space. Death and flame roaring——

I took two quick jumps, moving silently. At the end of the second jump I came down on the Martian's back, feet first, my legs held stiff before me.

It was like falling against a huge inflated balloon. There must have been no more thickness to his skin than the narrow outer layer of dark flesh that was visible to my eyes. I felt bone snap and break with a brittle groaning.

I stood up. The Martian lay where he had fallen, his face in the spilled yellow muck of his own blood. He cried out.

I wiped my hand across my eyes and went toward him, moving in sidewise, watching him cautiously. He looked as if he could never rise again, but I was wary. I knew his giant strength, his

immense will, his savage fanaticism in the cause he served.

I bent low, my body stooping in an awkward curve above him. And it was then he performed a miracle. Without rising, without exerting the power of any part of his body except his arm and hand, he reached up and threw his right arm over my shoulder, around my neck. He pulled me down, crushed me to the floor, made a lightning movement with his free hand. From somewhere under his tunic he had taken a metal-fabric harness; the harness came down over my head, a gleaming electrode slid under my tongue, and I felt a shivering sensation of ecstasy, then numbness.

He fastened a chain behind my head, and attached the end link in the chain to a bracelet he wore about his wrist. The chain was about six feet long, shining and flexible. I had that much room to move.

"Stand back a little," the green man said, thin-lipped. "I am going to fire."

He pulled the release. I shut my eyes. But I couldn't keep my eyes closed. I looked, and it was as I had dreamed it in my brain so short a time before—the thin pencil mark of fire streaking across the grid plate, the awful instant of contact, the flaring explosion, visible as a faint yellow flash on the dark plate—— And then I knew the station on the other side of the Moon was gone.

The Martian jerked his head. "Another shell," he said. "Same size."

The room twisted under my feet; the fumes from the breechblock burned my eyes. I was sick and stunned, but I got over to the hamper and carried back the second shell.

"Put it in," the Martian whispered.

I obeyed. The gray walls around me whirled and danced; the dead-white light beat in torrents and floods over my eyes.

Blinded, I sank down. I was dimly

conscious of the Martian's sweating and pulling at the fire slot. I heard the second soft moan of the projector. The sound it made was like a low dry cough.

I felt a stinging in my side. The green man stood over me. He spurned me with his foot.

"Get up," he said. "Get up."

"I'm done." The words crawled out of my throat.

"No," he said. "No; you're not. We're not through yet."

HE JERKED me to my feet. Terribly wounded as he was, he still had twice my strength. He had made no attempt to bind his hurt or stop the drip of yellow blood. Looking at that dribble slowly running down his side, I saw that the blood had not yet begun to coagulate. It was still running and falling on the floor in a pulsing stream.

"You'll bleed to death," I said. "Let me patch that up for you. I can't see you die in front of me like this."

"I won't die," the green man said grimly. His eyes held a burning brightness. "I can't die, until I've done what I've started out to do. Nothing can kill me now— Follow!"

We went out of the projector room, leaving the door open. Some of the vapors from the firing crept into the corridor and formed pools and eddies of heavy smoke. The gas that belched from the projector was thick opalescent mist, dull crimson; it coiled in stagnant masses that took shapes like sleepy snakes.

The Martian ran down the corridor in rippling strides. His head was tilted, his shoulders drawn back stiff, his body moving in a tempered rhythm. He seemed transfixed. He seemed to grow lighter and yet stronger as his blood fell away from him. He seemed immune to death and the thought of death.

He was a giant walking in the shape of a man.

We entered a long low room, the ceiling almost brushing the Martian's head, the plates of the inner shell of the disk showing ribs and braces. At the end of the room stood the WR generator.

It was a simple little thing. Small compact cube, black and glittering. Six coils, interconnected, the flow of cold latex juice* running from right to left. Dials and meters. Two switches, one green, one dull red. Two faucets, wide-mouthed, attached to the thick bellies of feed pipes.

So small a thing for worlds to war over! And yet there was nothing simpler nor smaller in the eyes of men than a drop of water—nor anything more important to a parched throat. Everything is relative. If the gods had been kind, it might have been Mars, the dry and burned, the scorched and thirsty world, that should have stumbled on the secret of creating hydrogen and oxygen from sand and then combining the two in water. There was sand enough on Mars. Sand—water from sand! Irony enough in that.

Irony, too, in the fact that it had been a man of Earth who had delved into the mystery of this secret, who had created the first WR generator. A denizen of a planet three fourths liquid at the surface had been the first to be able to make water! The gods, the silent gods sitting alone in space, must have laughed on the day when that miracle happened. The miracle of water from sand!

Something of this must have fled like a ghost through the Martian's bitter brain. As we stood there looking at the little generator, he turned and smiled at me very strangely.

"There's a jest for you!" the green man said. "Damned good joke! How the gods must laugh! But we don't

* Latex juice—name given to the cold power current generated by sun cells.

laugh on Mars. No; we spill our sweat and our blood, fighting to get the secret of this little thing."

HE WAS facing squarely toward me, and for the first time I noticed that he had brought along one of the giant shells that had been in the projector room.

He took it from his shoulder and dropped it clanging on the metal plates of the floor, next to the generator.

He knelt, and I got down beside him. "What are you going to do?" I said.

"I'm going to tear this thing to pieces. Then I'll pack it in the shell and fire it at Mars. There's a chance it may get there."

Sweat came like dew all over me. "Why didn't you try that before? There was never any need to wipe out those two stations."

He said: "I couldn't take the chance. The people at the stations wouldn't have let the shell go by. They'd have rayed anything that big. You know that. What would we have done here if we had seen a thing that size coming toward us?"

I clubbed my hands together. "But they didn't stop those heat shells you threw at them!"

"They didn't have time," he said, grim and flat, his words spitting into my face. "The shells came from the down side and came fast. They didn't have time to put up a screen, even if they had been able to get a vision of those little shells on an ordinary visiplane, which they couldn't do. This thing is big. And it will travel slower. They could have blanked it out."

I wanted to hurt him. "Even so," I said, "it won't get to Mars. The projector won't carry that far. You told me that."

His face shivered with an agony of despair. "I don't know," he said savagely. "Maybe it won't reach Mars. But the message I'm going to send when

we finish here will go through because there won't be anything anywhere to stop it."

"Yes," I said. "You've seen to that."

I watched him take the generator carefully apart. Not that he knew the inner workings of it any more than I did. But he had watched Stillson many times when Stillson was handling it, and he knew the neat way each section was made in one whole piece, and fitted smoothly, without joint or bolt, into the next. The edges of the sections were shaved so smooth that they clung together with a stubborn tightness by molecular tension. It took all the Martian's savage strength to separate the sections.

But they came. And piece by piece, coil with coil, tubes and meters and quivering dials, they were taken away from their place against the wall and packed inside the curved hollow of the great shell. The Martian carefully blocked off the flow of latex juice. There was a sputtering, a flicker of cold sparks, and then silence.

The thing was over. The Martian fitted the upper half of the projectile down over the hollow compartment and locked it together. He rose, swung the heavy weight of the shell to his left shoulder. He touched me.

"Now we'll go back to the projector," he said, heavily.

I hesitated, glancing around. The room looked bare and desolate with the generator gone. I missed something. I listened an instant, then knew what it was. I missed the soft crackle of the latex juice running through the coils.

"Wait," I said, remembering something. "What about water for the disk? For all these men here? You're going to leave us nothing?"

"There's a reserve," the green man said. He grinned, with a certain irony. "And Earth is six hours away. And

Stillson's coming with a fleet—you haven't forgotten that?"

"No; I haven't forgotten. Have you?"

"We still have an hour," he said calmly. "A little more than an hour before Stillson will be here. My work will be finished before that."

VII.

WE WALKED from that room silently, shoulder to shoulder. I didn't want to fight him any more. It might have been because I wore the harness, but I didn't think so. I didn't want to fight him any more because I knew he was right.

Going along the corridor toward the tower, I touched him gently on the arm. Even at that light contact he tensed and whirled.

"You can take this thing off me," I said, lifting my hand to the headgear. "I'm through. You've beaten me. You've beaten all of us."

He stared, lips curling. "No. You've made a fool of me already."

"You've made a bigger fool of me," I said. "I'd like this harness off."

He would not believe me. We plodded on. The opening of the runway loomed before us. We had stopped long since in the projector room and sent off the shell holding the generator. It was all we could do. Even now it would be racing along its path deep into space, holding a steady course toward Mars. If it got there in time—

"Do you think it will?" I asked suddenly. "Do you think it will?"

He picked up the thread of my thought, because it had been his own. "Already many of my people are dead." His voice burst out of him in a great sob. "And many more will die."

"I'm sorry," I said. "But I can't forget we've killed—you and I. I wasn't willing, but all the same it was murder.

I killed those two hundred that were in the stations."

I could never forget that. I had killed two hundred men.

"You did only what I commanded you," the green man said, very low.

"I'll see that you forget. I promise you that much peace. Now sit down and send this message."

I got into my place before the key-board. Everything was just the way it had been a few hours gone when I had come in from the runway and NX-5 had been sitting hunched over the board with the headgear cocked above his ears. And yet everything was changed. Stillson was gone to bring a fleet from Earth. There was the wound in the green man's side. There was the director lying so quiet on his back, his big hands crumpled into impotent fists as they had fallen at his sides before he had a chance to strike, his face frozen, his eyes as blind as stone.

I put the headgear on and opened the key. Power beat in a pulsing tide through the transmitter coils. I said: "Ready."

"Call Korna-on-Mars," the green man said.

Then his face was suddenly bloodless. Now the thing was so nearly done, now his triumph was so close, his weakness rose and overwhelmed him. His words stumbled, his voice blurred, but I understood.

I called Mars. Then a long time seemed to pass, with—nothing. Silence all over the void.

I looked at the green man. "Korna doesn't answer."

"Wait a little longer," he whispered. "Just a little longer."

Then it came. Ghostly and faint, I caught the dim signals:

"Korna-on-Mars replying. Station 1. Station 1. Ready for message. Ready for message."

I spoke: "Projectile will fall on landing stage 12, north port. Watch for

shell that will fall on roof at Korna. Trajectory arc plotted. Shell contains WR generator. That is all."

"Who is sending?" the Mars operator demanded.

I looked at the green man. He walked in glory.

I said: "NX-5 sending. NX-5 sending."

"Repeat message," the Mars operator flung back in a sudden frenzy. "Repeat, repeat, repeat."

Despite myself, despite all the antagonism I had felt, my blood stirred and responded to what was in that faint far-away voice. There was delirium in it, and unbelief born of hope, and a wild exultance that expanded upward and outward in a gigantic blossoming—a thing so huge and wonderful that it seemed to me that it filled all space even to the outermost barriers.

"Shell fired from station 1," I transmitted. "Shell fired at 16.08 Earth chronometer reading. Dismantled generator is cargo. Prepare to receive. Shell will fall on landing stage above Korna. Allow for probable navigation error. Shell contains rocket motor which is set for atmosphere flight and for landing. Prepare to receive. Do you understand? Do you understand?"

The answer burned the void: "Yes. Will cut off. Must give news. Must give news to city. NX-5, get away. Ships left Earth before we received your signals. They are coming. Use escape rocket on station. Hurry!"

Silence.

I turned. "They've cut off," I said.

The green man put his hand out and braced himself against the wall. He had no more blood in his face at all. He began to slip down slowly to the floor of the sphere.

I caught him as he fell; then I saw what he had seen on the vision screen.

A fleet from Earth. Eight ships, singing through space toward the sta-

tion hung here in the shadow of the Moon. They were coming for the green man.

STILLSON would be in one of those ships, eating his heart out, pacing and sweating; I could see him, his face contorted, his big hands clenched, the thick veins bulging in his forehead. He would want the Martian's blood. He would want the green man for a sacrifice to appease the anger of the Combine at his failure. He had failed. Even now he surely must know that.

I nodded toward the ships on the screen. "Those," I said. "What can they do to you, Five? You've beaten them. You, one man alone, have beaten the whole Earth. There's glory for you!"

I held the green man in my arms. He reached up wearily and wrenched the chain from the thin metal band around my head. He whispered something. I put my ear closer to his lips.

"I've taken the harness off," he whispered. "You're free. But wear it till they come. Wear it till they come, you understand? You've got to prove you weren't with me. You've got to make Stillson see you didn't help me of your own will."

"What about you?" I asked.

He grinned slowly, painfully. "I've got one more thing to ask of you. Don't let me die here. Take me to the lock. Let me go out before they come. I'd like to finish out there. Don't let me die here."

So then I said: "I'll help you, in this one thing. Can you walk?"

"I—I'm a little tired."

"Never mind," I said. "I'll carry you."

"Are they any nearer?" he muttered. "Stillson's ship. The leader. Does it look any closer to you?"

I looked up over his head at the square screen. The ships there were very big.

But I lied: "No. They're not yet close. We'll have time. I'll carry you."

I put my arms under him and tried to lift him up. And failed. He was too heavy. His bulk was more than my strength would overcome.

I tried again, till I felt the bones rub together in my back.

Then he said: "Never mind. This was coming to me. It was written before I was born."

But all at once his eyes fell on something that I couldn't see, and his face changed. He fumbled at his belt with thick weak fingers.

"Let me tell you what I want now," he whispered. He raised his hand, and in it lay a shining cylinder.

"Use that," he said. "I'll be grateful to you. I'll shut my eyes, and that will be all."

"No," I said. I pulled my eyes away from the gleaming little flame-tube. "I can't do it."

He looked at me. "You'll do it," he said, and fell back.

So then I took the small shining cylinder in my hand and, aiming it at the middle of his forehead, just above his closed eyes, I pressed a stud. Shivering a little, I watched while the green man died.

Just after that I heard footsteps outside in the runway and confused voices shouting, "They went this way. They went back in the tower."

Then there was silence, and some cautious whispering, and careful scurryings

and movements that I recognized as the actions of men setting a trap for a dangerous enemy. So they thought the Martian was dangerous! Well, they might.

He was as dangerous to their world as any man with an idea.

After a long time, emboldened by the silence from the sphere, they got up courage to cut through the cover-lid of the runway with flame arcs.

Stillson came in first, his gas mantle wrapped about him, his thin body limned in opalescent mist. He stood hesitant, his face veiled by the pellucid vapor that was his shield.

Then he shuffled forward.

I got up, by degrees. I was pretty weak. First I raised my body to my knees, and then I stood erect, facing him.

Stillson struck the Martian's shoulder with his foot. "So he's dead."

I muttered: "Yes. I killed him."

Stillson swept his sharp glance around the curved walls of the sphere. "The generator's gone?"

"Yes."

"Well, they've got their water," Stillson said, shrugging. "Be damned to them!"

He turned round on his heel and went out. I looked past the green man's head at the vision screen. Mars was very bright. I thought I heard a voice saying: "Water to make the desert bloom. Water out of sand. Now let the gods laugh!"



The Wand of Creation

*In which man's curiosity
penetrates a forbidden veil*

SEVENTY miles beneath the surface of the earth, a massive steel cylinder, fitted at its forward end with a huge rotary drill, bored its way rapidly downward through solid rock.

Within its narrow cabin, reeking with heat and the smell of scorched oil, two men crouched in pilot chairs, alertly watching the instruments and controls of their weird vehicle, which gleamed brightly in the glare of electric lights.

"Anyway, one ancient theory has gone to the limbo of has-beens, Dr. Spears!" the younger of the pair shouted above the growl of machinery and the rattle of stone fragments hurtling sternward through the evacuators. "Except for that lava pocket we ran into a few minutes ago, the old world's still perfectly solid at this depth. Who knows but that we may be able to go straight on to its center, without encountering the molten core the old-timers talked about!" The speaker's freckled face, beaded with sweat, wore a grin of enthusiasm, and his young eyes sparkled.

"Part of our business is to send obsolete theories to limbo, Nix," Walter Spears, a plump, bald-headed old scientist, responded jovially. "The earth may be practically solid through and through—we can't be sure how an enormous pressure will affect the state of matter regardless of temperature. However, solid or liquid, don't fool yourself that the core of this planet isn't tremendously hot.

"Old Terra hasn't cooled that much since it was made. It's a cinch that we'll need a much more heat-resistant subterranean than this one, to get to its

heart. Dammit, I thought for a minute we were done for! But by luck we got this iron coffin steered out of that lake of fire in time. Let's see, we must have picked up some mineral samples there. Suppose we have a look."

Spears' fat fingers manipulated a small valve. There was a hiss of steam as a jet of water was injected into the hot contents of the sample-receiving tube—a flexible metal pipe leading through the air-tight walls of the cabin, and on through the hull of the subterranean, to the great drill at its nose. It was through this tube that specimens of the medium through which the vehicle was passing could be taken.

Russel Nixon watched his elderly companion's moves with interest. When he considered the samples cool enough to handle, the doctor opened the breech of the receiving tube and, with a long tongs, removed the several ashy clinkers into which the water-chilled lava had congealed. Imbedded in one was a small piece of lustrous black substance, upon the glassy surfaces of which an oily opalescent sheen shimmered elusively. Spears broke the crumbly lava away from it with little effort. Then he hefted it critically in a gloved hand.

"Turn out the lights, Nix," he commanded suddenly.

His assistant obeyed; but with the electric bulbs extinguished, there was still a faint phosphorescent illumination, in which the curving metal walls of the cabin shone slumberously. The glow, greenish in hue, originated from the fragment of mineral in the savant's palm.

"Fluorescent," Nixon pronounced.

by Raymond Z. Gallun

"Radioactive, too," Spears added. "This stuff is far heavier than any substance I know of. That means that the atoms which compose it are much more complex—have a greater number of protons and electrons in their structure—than even those of radium and uranium. And complex and heavy atoms, not including those of lead and gold and so forth, which are comparatively light, are always radioactive. I think we've found something this time, Nix. Here, lift it yourself."

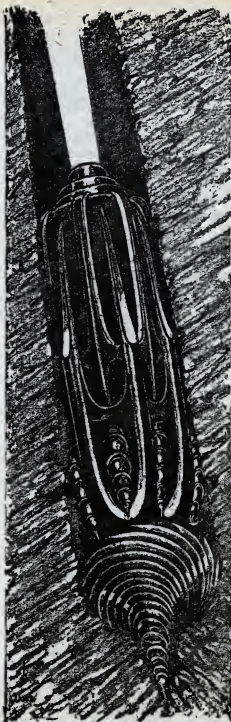
Caution prompted the youth to wrap his gloved hand in a piece of lead-cloth, which was lying near, before he complied. "Can't be too careful, doctor," he admonished. "Radium emanations can produce devilish burns unless you're shielded from them; and you can't tell what the emanations of this new stuff will do, even if the exposure is only momentary."

The bit of mineral was no larger than a marble, and yet its weight was equal to that of a five-inch ball of steel. Nixon muttered his surprise as he wrapped the thing in the lead-cloth and laid it carefully on the control table, out of the way.

"We ought to report our find immediately to the boys on the surface, so that they'll know, in case we don't get back," he advised as he turned on the lights.

"That's just what I'm going to do," Spears responded. "We couldn't afford to lose credit for a discovery like this."

ALREADY he had donned the headphones of the apparatus by means of which they maintained communication with the upper world. Radio had been deemed impractical to use at this great depth; and so a device which amplified



Illustrated by Elliot Dold

enormously the vibrations of the human voice, and transmitted them through the miles of rock intervening between the mechanical mole and the upper air, had been substituted.

The surface crew had delicate instruments which could detect and amplify these vibrations, converting them back into normal human tones. The "sonorator," as the apparatus was called, had proved ideal. The principle by which it functioned was the same as that by which a man can hear the pounding of distant horses' hoofs by placing his ear to the ground.

"Subterranean, M-1 calling—" Spears said into the microphone. Then he stopped and glanced, frowning, at the bank of meters before him. "My words aren't getting out, Nix," he commented. "We'd feel the vibrations shaking the old boat if they were. According to the instruments, every part of the outfit that we can reach is in working order.

"That can mean only one thing: The big sonorator rod at the stern—the thing that transmits the vibrations of our voices to the rock—was fused and ruined by the heat of the lava pocket we bumped into. It's out of commission, and it's where we can't get at it to make repairs." The scientist bit his lip ruefully.

"Anyway, we can still receive messages from above," said Nixon. "See! The signal light is burning. Zabideff must be talking now, doctor!"

"Right!" Spears confirmed briefly.

Nixon put on his headset, and for a moment the two subterranean explorers listened to what their surface man was saying. Spears was rubbing his hands absently, as though he was only subconsciously aware that they did not feel comfortable. The drill was grinding and rumbling on, deeper and deeper into the earth's crust.

Alexis Zabideff's voice spoke calmly in their phones: "We know that you

are still making progress by the vibrations of the drill, and we can of course determine your position by noting the angles from which they come. However, we'd feel easier, fellows, if you'd communicate with us. Some dangerous things have happened. It's beginning to look as though the subterranean has disturbed the inner equilibrium of the earth.

"There has been a severe quake in Chicago, and many other slighter seismic disturbances within a radius of five hundred miles from the point where you started out. And the loose soil which fills the tunnel into which the drill bored is beginning to smolder. Professor Payson feels that lava may be forced up through the broken rock which fills the tunnel, forming a dangerous artificial volcano here.

"I don't want to spread false alarms, but we may soon be regarded as responsible for a certain amount of damage. It would be better for you to turn back now. And by all means communicate at once and tell us how you are. Standing by—"

"Damn!" Nixon burst out irritably. "He—"

The young man got no further. There was a jarring groan within the myriad cubic miles of rock about them, and the subterranean shuddered convulsively before it continued on its way.

"Zabideff seems to be right, after all," Nixon conceded in a different tone. "Old Terra Firma has got the jitters! I guess we poked up her internal fires plenty when we ran into that lava pocket. We're starting back for the surface before we do any more damage."

He leaned from his chair, grabbed a lever and pulled it gingerly. The subterranean began to turn in its course, grinding around in an arc that in a short time would bring the machine back to vertical with its nose pointed upward. The cylindrical cabin, supported on

universal joints, swung easily in its cradle, its floor always remaining downward.

THE SAVANT made no comment upon his companion's decision. He had loosened one of his cuffs and had rolled up a sleeve of his sleek leather coverall. Now he was staring with a sort of surprised fascination at his bare forearm.

"Look, Nix," he said so quietly that it was difficult to hear him above the din of busy mechanisms. "Are you displaying any of these symptoms?"

The youth leaned toward Spears' chair, his eyes narrowing in worried puzzlement. The skin of the savant's arm, moist with perspiration, had a greenish, slimy coating, and the flesh was lumpy. The lumps, which were just beneath the surface, seemed to move and pulsate regularly, with a rhythm too slow to have any relationship to the human pulse.

"That piece of radioactive mineral there—its emanations are responsible," Nixon pronounced, pointing at the wad of lead-cloth lying on the table, in which the opal-sheened black fragment was concealed. "You were a little careless in handling it, doctor, and it burned you just as radium or X-rays would have done."

"But these aren't like radium or X-ray burns," Spears shot back, his plump red face serious and strained. "There are no abrasions, and the flesh is not raw or sore. But my arms and hands feel numb and heavy, and there's an aching sensation around the bones. I feel sick. Better check up on yourself, Nix. I'll grant that radioactive emanations are probably responsible for all this; but I'm sure that their effect is something far different from anything with which we have previously been acquainted."

The excitement of adventure had kept Nixon's physical sensations in the background. Now, however, when his

attention was drawn to them, he realized that his head and eyes ached painfully and that his stomach seemed upset. His limbs were almost without feeling. Unfastening the sleeves and front of his coverall, he saw that his arms and chest were marked with the same malignant symptoms which Dr. Spears exhibited—thick pulsating lumps beneath a greenish, slimy skin. His lips were dry, and there was a bitter taste in his mouth.

"There does appear to be something wrong with us, doctor," Nixon admitted. "But I suppose it's all in the day's work. I need a drink of water."

He arose from his chair and strode unsteadily on stiff, rheumatic legs toward the water tank. A thought came to him: Was the air of the cabin being poisoned by the inward seepage of volcanic gases from outside? He sniffed critically. There was the usual smell of hot oil and a slight musty odor reminiscent of a dank cellar, but that was all. The air-purifying system was functioning perfectly, and, besides, the cabin was of stout, seamless steel which could not be sprung. There was no opening in it by which gases could enter. Even the sample-receiving tube was protected by several automatic valves.

Nixon dismissed the idea and drew a glass of water from the tap. It did not take more than a glance at the fluid to convince him that there was something devilishly and breath-takingly wrong with it. Instead of being clear and pure, as it had been a short hour before, it was green and thick, emitting a fetid stench like water dipped from a stagnant pool in midsummer.

"Damn!" he swore. "Doctor, come here!"

Spears was already at his side, having left the controls of the subterranean momentarily in the care of the automatic piloting device. Nixon held the tumbler up to the light, and together they examined its contents. Thousands of

tiny green specks and threads of living matter swirled busily in the water, which so recently had been practically sterile.

And then the second earthquake temblor, which was strong enough to be felt above the rattle of the drill, struck. It was like the first in violence and was as quickly over. The door of a cabinet containing food supplies burst open. A large tin box tumbled out of it and fell with a clattering sound to the steel floor.

"There go our sandwiches!" Nixon remarked in an attempt at lightness. Then he stared at the box like one hypnotized.

It lay on its side with the lid open; and there welled from it, not sandwiches but a jellylike mass of ooze that possessed a motion of its own. Somehow it was ghoulishly and unbelievably alive. It crept out of the tin and started aimlessly across the floor, doubling itself along like a huge, shapeless inchworm.

Other foodstuffs had undergone the same transformation. There were slithering, plopping sounds as several similar gobs of living jelly dropped from the cabinet. Only the canned goods seemed the same, and who knew what the opening of one of the cans might reveal?

IMPULSIVELY Nixon kicked one of the advancing masses of ooze furiously, but the several spattered parts into which it was divided as a result of the blow continued sluggishly forward, undaunted. The youth gave an inarticulate gurgle of revulsion and amazement.

The scientist grasped him by the shoulder. "They're some very low form of creature," he said with suppressed excitement. "Probably not much more than masses of protoplasm. I don't think they have the power to do us any harm—not until they grow bigger at least. I've just been rummaging

through the medicine kit, and I found this ointment. It probably won't do any good, but I'm going to rub some of it on my arms and body just the same. You do likewise."

Spears scooped a generous portion of the white greasy stuff onto his fingers and handed the box of ointment to his companion.

Somewhat dazedly Nixon returned to the controls, which it was unsafe to leave guided only by the automatic pilot for too long a time. Then he began salving himself. Glancing back he saw that Spears, heavy and old, and now ill with a mysterious and sinister affliction that had brought an odd look of death to his eyes, still had the energy to be intensely busy.

Now he was examining a bit of one of the protoplasmic creatures under a microscope. Now he was hurrying toward the control table, where the lump of radioactive mineral still lay in its shielding wrapper of lead-cloth. Gingerly he picked it up and carried it back to his workbench with a small tongs.

"What's up, doc?" Nixon inquired, a trifle unsteadily.

"Something big," was Spears' level answer. "Something which— Well, wait till I finish what I'm doing."

Nixon's attention was distracted from the experiment. The red signal bulb, announcing an incoming message, burned on the switchboard. In a moment he had the phones on his head, listening to Zabideff's tense words:

"We haven't yet received any report from you aboard the M-1. Can you hear us? Is your transmitting apparatus damaged? We are still able to pick up the vibration of the drill intermittently. The seismic disturbances blur it out frequently. Chicago is being shaken to pieces. We've had to move our equipment to the open country. A lot of people have been killed. A violent eruption of volcanic matter from

the tunnel mouth is certain within the next two hours——"

Zabideff's voice was drowned by a grumbling growl, produced in the phones by the tortured, quaking rock of the earth's crust above.

"Damn!" Nixon murmured wearily. "There's going to be hell up there! We caused it, but we can't stop it. And we're done for ourselves; even if we could, by some miracle, fight our way back to the surface, this disease, or whatever it is, would finish us."

He raised his hands and passed them across his burning eyes, like lifeless clubs, knotted and swollen. Tiny red dots danced before his vision. It wouldn't be long before he'd be unconscious. Well, anyway the drill was now moving straight upward.

Spears' voice, shouting in hoarse triumph, caused him to look around. The old man was tottering, clinging with clumsy hands to a stanchion to keep his balance. And yet, ill though he was, he was still dominated by the unquenchable enthusiasm of the true scientist.

"We've done it, Nix!" he yelled raspingly. "We've made the greatest biological discovery of all time! We've found the mineral which is literally the wand of creation! Arrhenius' theory of life-spores, propagated throughout the universe by light pressure, was wrong. We're forever famous, Nix—if we can somehow communicate our find to the surface."

"I don't quite follow you, doctor. Explain," Nixon commanded with an icy calm which showed that his emotions no longer were aroused.

SPEARS edged his way to the pilot chairs and dropped weakly into the vacant one. "I forget that you are more adventurer than scientist, boy," he said. "I'll try to clear things up for you. The theory of evolution explains how, by a process of natural selection, all the complex life-forms, both plant and

animal, that have ever existed on the face of the earth were developed.

"The common ancestors of all were microscopic one-celled infusoria and bacteria, which were the only living things upon our planet during early Eozoic times, countless millions of years ago. From these first simple fauna and flora, all the trees, birds, mammals, and so forth, even the human race itself, are descended. Through variations in individual characteristics, the survival of those individuals who were most fitted to cope with their environment, and the passing on of their favorable characteristics to their offspring, the miralce of the animals, plants, and humans of to-day was accomplished.

"All this is quite clear. But how, in the beginning, when the earth was still sterile, yet ready to receive life, did these first ancestral microorganisms come into existence? How did the inanimate become animate? It was a question not easily answered.

"In the early twentieth century, Arrhenius, a brilliant Scandinavian scientist, suggested that minute life-spores, in a state of suspended animation in which condition they could withstand ages of darkness and absolute cold, might have been propelled across space by light pressure from some distant world, where plants and animals already existed, and have thus reached our earth, where conditions were favorable to their growth. Until now that was the only reasonable explanation of the manner in which living things first came into being on the terrestrial surface.

"However, we have the real, the true answer, now, Nix. Those original microorganisms were actually created from inorganic matter by the stimulating influence of an emanation thrown off by an exceedingly radioactive element. The piece of black mineral we took from the sample tube is a salt of that element. When I dropped it into

that beaker of strained water, I found this out. I saw thousands of tiny squirming amoebæ take form before my eyes.

"Our troubles began when our drill grazed that lava pocket. It was much deeper in the earth than any pocket which could have found an outlet to the surface in any ordinary circumstances. Doubtless the molten rock contained considerable quantities of the radioactive element. The small fragment of mineral we examined must not be blamed for all that happened, though I've thrown it into the excavators now.

"Doubtless the emanations were streaming through the cabin walls in enormous volumes from outside. What happened? In every substance that could support life, living protoplasm was created! Our food became gobs of animated jelly, in which millions of cells were bunched together, capable in some way of functioning sluggishly as one animal. Our water was contaminated with microorganisms; and our flesh, really a marvelous soil for microscopic growths, became the habitat of millions of tiny creatures which had not been there before. Some of them are probably the bacteria of deadly new diseases. That is why we are ill, Nix."

Almost unaware of the intermittent and ever-increasing thunder of the earthquake now going on around and above them, Nixon had drunk in the words of his chief, held in a spell of sheer fascination.

"One thing I don't get, doctor," he said huskily. "If the emanations of this element created life in the upper world in the beginning, why isn't the process still going on there? What happened to the element?"

"Quite simple," Spears shot back. "Radioactive disintegration explains it. Radium, as you know, changes to lead in time, any given amount of it being almost completely transformed within a few thousand years. Our new ele-

ment is doubtless more radioactive than radium and would decay more quickly; nor would it be replaced by the disintegration of more complex elements, as radium is, by the breaking up of uranium.

"Very early it had probably almost disappeared in the upper world. By now it has practically or entirely vanished on the surface of the earth. Here, where great pressure and primitive volcanic conditions prevail, its disintegration was somehow arrested, and it still exists in large quantities. It may be that there are faint traces of it on the surface, even now. New diseases appear occasionally, you know, and cancer—the phenomenal and still unexplained growth of cancer cells—may be the result of the presence of an infinitesimal particle of the element in the human system.

"But we should not be wasting time talking. We've got to inform the upper world of our discovery. I'm old, and all my life, boy, I've dreamed of doing something big like this. We can't waste our chance of really amounting to something in the field of science. Some way, somehow, we've got to repair that sonorator, so that we can tell the world what we've done, if we don't get back. Do you hear, Nix—" Spears' voice trailed away.

Foggily, Nixon sat looking at his chief's inert body. His bald pate was shiny with sweat; his face and arms were marked with huge greenish lumps. The old savant's excitement, coupled with the ravages of whatever deadly malady was gnawing at him, had caused him to lose consciousness.

THE SIGNAL light of the sonorator receiving apparatus was burning again. Automatically Nixon pushed the phones over his ears to listen to what Alexis Zabideff had to say, coming brokenly through the rifts in the seismic static:

"Volcanic eruption expected to start

within fifteen minutes—Refugees fleeing—We've had to move sonorator apparatus still farther back. Can detect your presence now and then, but as yet there is no word from you—"

The communication broke off. Simultaneously the subterranean gave a lurch, and then there was the shrill whine of the great drill spinning loosely in air.

This unexpected development evoked no immediate action on Nixon's part. He sat pensively, his aching eyes wide and staring, as if he was gazing into another plane of existence. He was thinking not of fame as Spears had been—not even so much of the destruction and death the earthquake was bringing to the world above. A fearful inspiration had come to him: What if some of that element, which was the wand of creation, was to be discharged out of time by that artificial volcano, into the world of mankind? What dread horrors would it bring? What exterminating plagues? What devilish monsters of protoplasm would rule the planet, disposing of the human race? Most important of all, what could one lone man, sick and perhaps dying, do to avert such a catastrophe?

He considered these things quickly, grimly; then he shut off the racing drill. On limbs that seemed to be composed more of wood and stone than of flesh, he made his way to the door of the cabin, a flashlight clutched in his almost-nerveless fingers. Nightmarish things of jelly scuttled about his stumbling feet. The inner and outer portals of the subterranean, mechanically operated, clanged open at a touch, and he clambered forth into Stygian darkness.

His flashlight beam played ahead of him over a rough, stony floor. The air was stifling, and there was the roar of a waterfall mingling with the trembling groan of the earthquake. He was in a vast cavern. How vast? One hundred miles wide, or a thousand? His light revealed no boundaries. Even the roof

was completely lost to view; but from it, immense chunks of rock, dislodged by the constant shaking of the earth, plummeted down thunderously.

And then, out of the chaos of Nixon's mind, a plan came. His jaws tightened. As quickly as he could he reentered the subterranean, closed the doors, and started the drill. Turning the steering gear, he guided the vehicle back into the rock. With a protesting snarl it continued on its way.

Two facts were uppermost in Nixon's mind: One was that the dangerous lava pocket, that so threatened the upper world, was not far above. He was now headed straight toward it. The other fact was that if you fed uranium fuel too rapidly to an atomic motor, the motor would blow up; the shock would be conveyed to the fuel drums, and then there would be an explosion of unimaginable violence. There was a safety stop to prevent the throttle from being pulled too far, but it could be fused off with a blast-welder.

Quickly he accomplished this small task.

There was another important thing to be done. No one must ever tap this region of dread force again. A warning must be sent. He had a way of doing that, too—one that had a fair chance of being successful. He gripped the throttle, moving it back and forth with quick, precisely timed jerks. In response the great drill snarled and ebbed, forming dots and dashes in the almost-obsolete Morse code. Alexis Zabideff's sonorator receiver should be able to pick up the vibrations.

Nixon had paid no attention to Spears; but now the old man regained a sluggish, half-consciousness.

"Maybe we've got our discovery across to them, doctor," the youth said cheerily. He added no more, but a faint answering grin flickered on the elderly savant's face.

The high readings of the temperature

meters showed that the lava pocket was very near.

Nixon jerked the throttle lever far back, beyond the point where the safety stop had been. His senses registered no more after that.

IN THE UPPER world a terrific concussion was felt. Then the forces that had convulsed the crust of the planet slowly died away.

A large auto truck, which housed a complicated sonorator apparatus, stood parked in an open field. Within it, Alexis Zabideff sat hunched at a small desk, scrutinizing a paper upon which he had traced a few cryptic words, which he read over and over again:

Have found huge cavern. Will try to drain lava pocket into it by exploding subterranean. Hope will reduce lava pressure and prevent eruption. Have found radioactive element which changes food, et cetera, to living protoplasm. Spears says created first life on earth. Lava full of element. Dangerous to human life. No one should come here again. Luck.
NIX.

Zabideff's broad Slavic visage registered certain facial gymnastics. "Glorious young fool!" he muttered admiringly. "But the adventure must

have driven him mad. At least this twaddle about a radioactive element looks mad." Zabideff paused. His lofty forehead crinkled thoughtfully.

"Maybe he's right, after all!" he burst out suddenly. "Who can be sure? I'm going to find out! We'll build another subterranean! Lead armor should afford adequate protection from anything radioactive, and with sufficient care no seismic disturbances need be stirred up.

"Reyburn!" he called to the driver of the truck. "Start back to headquarters immediately."

And far underground, a river of molten rock flowed from a gigantic rift in the wall of a seemingly boundless cavern, and meandered across its floor, illuminating the place with a murky, infernal light. Water hissed angrily in the path of the lava stream, solidifying some of it. Lumps of a black lustrous mineral appeared in the hardened slag; and in pools near by minute bits of life began to squirm. The wand of creation had touched a barren, sterile world.

In the middle of the molten river, a curved plate of metal, which may once have been part of something fabricated by human hands, drifted idly.

NEXT MONTH

An outstanding author of the weird story steps into science-fiction with a tale that is highly imaginative and disturbingly different. **THE BRIGHT ILLUSION**, by C. L. Moore, reveals a planet of indescribable beauty—and horror. You will remember it.

The Stolen Element



*"Turn off the power, man!
Open the tube and let us ex-
amine the new metal!"*

*A whimsical story of knowl-
edge without understanding!*

Illustrated by Elliot Dold

by Paul Ernst

THE LABORATORY, one of the best equipped in Italy, was in the semidarkness of the Neapolitan dusk. In the middle of the room a giant vacuum tube reflected light from the glinting small mass of metallic salts within it. A hum of power sounded.

The metallic salts in the tube were those of uranium. The uranium was being bombarded with neutrons. Presently, by a marvelous modern alchemy, the uranium should become another element—a new element, never in existence before as far as science knew. It

had not even a name, as yet. It was known only as No. 93.

With his weary, seamed face twisted in concentration, the brilliant Italian scientist, Vichoni, watched the metallic lump in the tube. His black eyes were sunk deep in his head from exhaustion. His stumpy body was bowed with fatigue.

Beside him, was a statesman, a man whose name was known internationally. A tall, broad-shouldered man with iron-gray hair, he watched the tube with equal intentness.

"It is the first time I have tried the experiment on a large scale," Vichoni muttered, more to himself than to the statesman beside him. "Before, I have bombarded only a few uranium atoms with neutrons. Always the experiments have been successful and the new element, 93, has emerged. Now, attempting to turn such a large mass into 93, we may fail. We may not have enough power. It may be impossible to generate enough power."

He jerked his head toward one of two assistants who worked with him in the laboratory. This man, a tall, burly fellow with a dark, impassive face, moved the graduated power switch up to its last notch. The power hum grew shriller.

"I still cannot believe," said the statesman. "In the old days it was held impossible to transmute one element into another. That is why they were called elements; they were thought to be substances reduced to their last simplicity, the unchanging bricks from which the universe is built."

A weary smile passed over Vichoni's lips. "I know. The old alchemists bent over stews containing bats' wings, powdered horn of unicorn, lead, and gold, and attempted to change the base metal into gold. Magic, it was thought to be. But if that is magic, the modern scientist is a magician. For with this process base metal *can* be changed into gold."

"But how?" demanded the statesman, wide-eyed. "How?"

With his eyes constantly on the big vacuum tube, Vichoni explained. "There are ninety-two elements. They are numbered in order, from one to ninety-two, according to the number of surplus protons, or particles, with a positive electric charge, in their nuclei. Thus hydrogen is No. 1. It has but one proton in its nucleus. Uranium, which we are working with now, is the end of the list—No. 92. That is because it has ninety-two protons in its nucleus.

"This is the only difference between elements—the number of surplus protons in their nuclei. Add protons, and you change elements; iron, with a few extra protons forced into each atom, becomes gold. In the present case we take uranium, which has ninety-two protons, and add one more which makes it a new element with ninety-three in its nucleus."

"And you add protons at will by this 'bombarding,' as you call it?" said the statesman.

"Yes. The uranium in that tube is being bombarded by an unseen stream of force particles called neutrons. A neutron consists of one proton, or positively charged particle, and one electron, or negatively charged particle. When the neutrons are shot into the cores of the uranium atoms, they split. The electrons fly out. The protons alone stay in. Thus as many surplus protons can be added as you please—in this case only one to an atom, which makes our uranium a new element like nothing ever seen on earth before."

"Iron into gold, uranium into No. 93," mused the statesman. He smiled a little. "Old dreams die hard. Gold has been man's god for so many centuries that now even I find it hard to get it out of my mind. It seems to me that if you can change any element into any other element, there should be no question of what you should change into

which. My first impulse would be to change the iron into the gold."

The scientist shrugged scornfully. "Gold? What is gold? Nothing but the measure of wealth. You can't make anything of it but ornaments. It hasn't a hundredth the real value of iron. But my No. 93 will be useful. It is the hardest substance known to man, for one thing. Reflect what could be done with a metal that will cut steel as if it were cheese."

The statesman nodded. "Such a metal would make us supreme in war, the greatest nation on earth. Actually, of course, it makes the turning of base metals into precious ones seem of little importance."

THE TWO men were paying no attention to the assistant at the power switch. But the man was listening intently to them.

In the dark eyes of Carlo, chief laboratory assistant to Vichoni, was a glitter of greed. So the making of gold from iron seemed of little importance to Vichoni and the statesman, eh? It did not seem of little importance to Carlo. He knew many things he could do if he was master of turning iron into gold.

The greed in his eyes was reflected on the face of Farnese, the other man who assisted Vichoni in his State-subsidized laboratory. Farnese was a small man with a rat face and beady small eyes in which shone distorted intelligence.

But the two subordinates kept silence, and Vichoni and the statesman continued to pay no attention to them.

"A new metal so hard that it would turn aside all enemy projectiles and pierce all enemy defenses," mused the statesman. "A marvelous achievement! But, tell me, isn't this present experiment about completed?"

Vichoni stared at the big vacuum tube and gnawed his lips. "It has been completed for many minutes—if the experi-

ment can be a success on so large a scale. After absorbing the neutrons shot at it, uranium converts itself very quickly into No. 93."

"Then turn off the power, man! Open the tube and let us examine the new metal. What are we waiting for?"

Vichoni sighed. "I have not told you all the story. It is easy to change uranium into 93 with this equipment. It can be done quickly and surely—at least in small amounts. But it is not so easy to keep 93 once you have it.

"93, with chemical properties analogous to those of manganese, is highly radioactive. It does not stay placed. It destroys itself by its own emanations. You see, the surplus proton driven into each atom by my neutron bombardment will not stay in that atom. The proton, forced into an artificial prison, fights its way out again and flies away. I have observed the phenomenon again and again. I have timed it.

"In thirteen and one half minutes the surplus protons driven into the uranium atoms to make 93 fade slowly out again in the form of radioactive emanations. Then our 93 is once more—simply uranium, the metal we started with. It is the same with other elements. In thirteen and one half minutes gold which is made from iron loses its artificially added protons and becomes mere iron again.

"I have found how to change one element into another, yes. Now the big problem is to make the change permanent—to make the surplus protons stay in the atoms into which they have been driven. In this present experiment I am hoping to do that by continuing to bombard the uranium in this tube long after it has become No. 93. Perhaps then the added proton will stay in its atom and we shall have an unchanging new metal to work with."

"But surely," urged the statesman, "the biggest problem has been the changing itself. Surely, having solved that,

you can solve the other and make your changes permanent."

Vichoni shrugged. "Man may never discover how to make the change permanent. He may change one element into another. He may observe the change. Then he may always be forced to watch helplessly while his artificial element fades back to the element ordained by nature."

At the power switch, Carlo, the unobtrusive assistant, turned quickly to hide a bleak smile which touched his thin lips.

Vichoni was a great man, and he, Carlo, was unheard-of. Vichoni knew more about science than Carlo could ever learn.

But in the transmutation of elements it happened that Carlo was Vichoni's master, though no one but the ratlike Farnese dreamed that.

Iron into gold! Billions for the man who could turn iron into gold—and make it stay gold!

And Carlo could do that. By accident he had hit upon a method of doing something that even his illustrious chief could not do. He could change elements by adding protons—and make the protons stay permanently in their new home.

With the addition of simple, but expensive, equipment, Carlo knew he could take the apparatus of Vichoni's and make gold that would stay gold—not gold that would revert to iron in thirteen and a half minutes.

CARLO had it all worked out. He needed Vichoni's laboratory and equipment. He needed money for the new apparatus. Once he had the laboratory he could get immediate cash by a judicious use of the new element, 93, and then he could buy the apparatus. It was simple.

He glanced across at the intent scientist, Vichoni, and in his eyes was cold, calm murder.

"We'll take the stuff out of the tube now," Vichoni was saying. "Then we'll see if it stays as it is, or if it reverts to uranium."

At his signal, Carlo expressionlessly turned off the switch. Vichoni opened the tube. There was a diamond drill point near by. He snatched it up and drew it heavily across the small button of metal taken from the tube.

No mark of any kind appeared on the surface of the metal.

"It's 93!" breathed Vichoni. "It can be made in any quantity, then."

They watched the new element. The scientist held his watch in his hand anxiously ticking off the seconds.

Thirteen and one half minutes! In that short time, always before, his 93 had inexorably lost its added protons and faded back to uranium. Would that happen this time, in spite of the extra bombardment of neutrons?

He sighed raggedly. The hand holding his watch trembled a little. The statesman took time off from scientific matters to become human.

"You're overtired," he told Vichoni. "You're exhausted. You must rest. Think of the value of your life to the State while you complete this process of yours."

"I am tired," admitted the scientist. "Night and day, for many months, I have worked at this. I shall take a month's vacation at once."

Carlo, the brawny assistant, glanced quickly at the ratlike Farnese. The smaller man nodded to show that he comprehended.

A month's vacation for Vichoni! That meant that if something sinister happened to the scientist it would be a month before it was discovered. If he disappeared now it would simply be assumed that he had gone to some obscure place, incognito, for a good rest.

And in a month Carlo could make himself wealthy enough, by laboratory

process, to be above all the laws of man, including those against murder.

Vichoni, watch in hand, counted the slow minutes.

Twelve. Thirteen. Thirteen and a half.

The button of mysterious new metal, element 93, was crumbling into the metallic salts of uranium again.

The statesman caught Vichoni as he tottered from disappointment added to his exhaustion.

"They won't stay," almost sobbed the scientist. "Always the protons fade out. Always!"

"It's all right, my friend," said the statesman. "You will succeed in time. You will find a way to make those devilish protons stay in their atoms."

"Perhaps, in time." Vichoni sighed. "But I want to do it quickly. Of late I have had a strange premonition that I have not long to live."

And Carlo, the burly assistant who by accident possessed the key to the riddle his chief was struggling so hard to unlock, smiled a little. For the premonition of Vichoni was soon to be justified.

CARLO and Farnese stayed behind in the laboratory as Vichoni went to the street door with the statesman.

"A month's vacation!" Farnese whispered. "In a month the equipment you need can be manufactured, and we can start making gold from iron."

Carlo glanced at the door to be sure Vichoni was not returning. "It will not take a month for the equipment to be made. It is made now, ready to be delivered when paid for. Three months ago I placed the order with a firm in Naples, giving a false name."

"Then you knew three months ago that you would kill Vichoni?"

"I knew it a year ago!" said Carlo with cold ferocity. "When I discovered how to transmute elements and

then make the change permanent, I knew that I would one day kill Vichoni to get his laboratory. That day has come—with his statement that he is to retire for a month's rest. A month? He shall rest for longer than that."

Steps sounded in the long corridor leading to the laboratory.

"Here he comes," whispered Farnese. "Shall—it be now?"

Carlo nodded, his eyes like ice. "As well now as to-night or next week."

He picked up an iron bar and stepped to the door leading from the laboratory to the corridor. He partly closed the door and stood behind it, with the bar upraised.

Vichoni came toward the door. He was a tired, elderly man, and his step showed it. His feet lagged; he looked neither to right nor left nor ahead. Carlo's hands tensed on the bar.

It was ridiculously easy.

Vichoni stepped into the laboratory, saw Farnese and started to say something to him. Carlo brought the bar down with all the force of his heavy shoulders.

There was a vat of sulphuric acid in the basement under the laboratory. The vat was large enough to hold a body.

Carlo dragged the dead scientist down to the vat while Farnese, face white and hands quivering, cleaned the laboratory floor of blood.

Vichoni's laboratory and splendid scientific equipment were in Carlo's bloody hands. Six blocks away, in a manufacturer's warehouse, was the additional equipment needed for turning common iron into gold that would stay gold.

Now all Carlo needed was some two hundred thousand lire to pay for the new equipment. And he knew how to get that, all right. He had plotted it out months ago.

He was going to get it from the rich miser, La Paglia, who lived with his hoarded wealth on the Via Roma.

THE FOLLOWING noon Farnese and Carlo watched while another metal object lay in the big vacuum tube and was bombarded with neutrons according to the Vichoni process.

Iron into gold, gold into uranium, uranium into 93—a sort of modern super-alchemy!

But Carlo's face was cold, almost indifferent. This was but a step in becoming a sort of a golden god by being able to create as much wealth as he wanted. Also he was less interested than he might have been because this was the second time the metal in the tube had gone through the elemental scale from iron to 93. The first time, Carlo had held a watch on it, to discover precisely how long it took the resultant 93 to revert to uranium, then to gold, then finally back to its original iron. This second time was the one that counted in his scheme.

However, Farnese was not indifferent. The little man was a rabbit in his lack of physical courage. Normally he was full of fears; now he was terror-stricken!

"How do you dare handle 93?" he quavered. "How do you dare? Never yet has the new element been handled as you plan to do now. Who knows what it may do to you?"

Carlo glared at him. Farnese was a weakling. Carlo realized now that he should never have taken him into his confidence. He also realized that he had better kill him as soon as the new equipment had been set up with his help.

"What can 93 do to me?" he grunted contemptuously. "You talk as if it was some kind of magic stuff. It's only a metal—a new metal, hitherto unknown to nature or to man, but still just a metal. How could it harm me?"

"Who knows?" said Farnese, shivering a little. "Vichoni manufactured a thing against the laws of God when he made an element. It is not man's work to make things so mighty as elements.

Think! A new substance in the universe! Who can tell what horrible powers the unknown stuff might have?"

"Be practical," snapped Carlo. "You're only talking superstition."

"Very well; I'll be practical," said Farnese. "One thing we do know about 93 is that it is highly radioactive. It may burn you mortally to carry such a large chunk of it next to your body."

Carlo shook his head impatiently. "I won't be in contact with it long enough. You know how we have this planned out, after observing the time taken for 93 to lose its protons and become iron again.

"Thirteen and a half minutes to change from 93 to uranium. Thirteen and a half more to fade from uranium to gold. Another thirteen and a half before the gold returns to iron. Very well; I shall take exactly twenty-seven minutes from here to the house of the miser, La Paglia. Then the bar of 93 I carried in my sleeve from this laboratory shall have become the bar of gold I show La Paglia. Long before the thirteen and a half minutes are up and the gold becomes iron, I shall have sold the bar to La Paglia for enough to pay for the new equipment. Thus, you see, I shall have the 93 next to my skin for only a short time. And what can any metal, no matter how mysterious, do in a few minutes?"

"You don't know," whimpered Farnese. "Nobody knows what dread properties this new element may have."

"Nonsense!"

"Why make the iron into 93? Why not stop the process with uranium and carry that known element to La Paglia's?"

"Because," rasped Carlo, "the uranium would fade to gold in only thirteen and a half minutes, instead of the twenty-seven it will take 93 to fade to gold. We could not get from here to La Paglia's in thirteen minutes unless we had wings." He glanced at his

watch. "Get Vichoni's car out of the garage."

Farnese left the laboratory. Carlo stared at the vacuum tube.

The object in it was—or had been—the iron bar which had crushed Vichoni's skull. A plain round bar, it had changed from iron to gold and then through uranium to 93. Now all was in readiness for Carlo's plan to get cash for his equipment.

CARLO stepped across the walk and into the car of his dead chief. His left arm hung stiff. Thrust up his left sleeve, resting against his bare flesh and held in place by his cupped hand, was the bar of 93. An eighteen-inch bar, very heavy, it could be carried concealed better that way than any other.

Farnese, at Carlo's command, drove slowly off toward the Via Roma.

Carlo kept his watch in hand, timing the procedure.

In twenty-seven minutes from the time he had left the laboratory he must be entering La Paglia's study. At that moment the bar of 93 he carried in his sleeve would have radiated enough surplus protons to become a bar of pure gold. In the thirteen and a half minutes during which the bar would remain gold, Carlo would have plenty of time to sell it to La Paglia. Then let the miser discover, a few minutes after Carlo's departure, that his bar of gold was common iron. He could not prosecute. It was illegal at the moment to own gold. A law, Carlo reflected, which he would bribe the government to change later.

Carlo cursed a little as the car rolled along and he sat with his arm stiff from the weight of the bar. He cursed Vichoni.

The murdered scientist had never cared for money. The State had subsidized his laboratory and filled his needs. Personally he had never had more than a few thousand lire in the bank. That was what made this annoy-

ing swindle of La Paglia necessary. Otherwise Carlo could have got the money he needed by just forging a check against Vichoni's account.

"Impractical fool!" snarled Carlo.

Maddening, that a man like himself, who would soon be worth untold millions in gold, should first be forced to undertake a cheap swindle like a common confidence man!

He kept glancing at his watch. "A little faster," he said to Farnese.

At twenty-six minutes after leaving the laboratory, Carlo got out before La Paglia's house. He went to the door, with his left arm stiff with the weight of the eighteen-inch metal bar hidden up his sleeve.

La Paglia himself, a shriveled, elderly man who looked like a spider in a dressing gown, opened the door. One minute and six seconds later Carlo entered La Paglia's private study with him.

"You have that which you telephoned me about?" La Paglia said to Carlo.

Carlo nodded. He drew the bar from his sleeve. He was almost afraid to look at it for an instant. What if it had not lost its protons and he had no gold bar to sell!

But the bar was of gleaming yellow metal. The eyes of the miser, La Paglia, gleamed in answer as they rested on it.

CARLO thumped it on the miser's desk and flexed the fingers of his left hand. His left arm was sore and stiff clear to the shoulder. But that, of course, was only because the bar was very heavy now. It had been a feat to carry it that way. But Carlo had not wanted to wrap it and carry it as a bundle because of the few seconds necessary for the unwrapping. He had no seconds to spare. He must leave here before the bar ceased to gleam with a golden shine.

"Here it is," he said. "Over three hundred thousand lires' worth by actual

weight. Give me two hundred thousand, quickly, and it is yours."

La Paglia stared at him with maddening deliberation while the precious seconds ticked away.

"Why are you in such a hurry?" he demanded.

"I must get back to the laboratory before I am missed," Carlo explained rapidly.

La Paglia took more maddening seconds to stare first at the dull yellow bar and then at Carlo. "Why don't you smuggle this out of the country, to Holland or Switzerland, and get full value for it instead of selling it to me for less?"

"You'll soon find out," Carlo said to himself. And aloud: "Because I must have money immediately. Come—do you want to buy it and make a fifty-per-cent profit, or shall I offer it to some one else?"

"I'll buy it," grated La Paglia. "I'll buy it. But first I must examine it."

His voice died away as he bent over the bar. He weighed it. He tested it. He passed his finger tips over it as if his miserly touch alone could tell him it was true gold. He took a knife from his desk and notched deep into the bar in several places.

Meanwhile the sweat was starting out on Carlo's forehead in fine drops. The minutes were flying. With each minute more of the artificially added protons were radiating from the bar.

He got up. "I must get back to Vi-choni! Immediately! Take my bar or leave it. But if you take it, give me my money at once and let me go."

La Paglia grunted. In his shrewd eyes was the conviction that the bar had been stolen. At the same time, the bar was indubitably solid gold and worth more than three hundred thousand lire.

"All right," he said.

He walked to an antiquated safe and opened it. To Carlo it seemed that each move took an hour. And it seemed

to him that the yellow gleam of the bar was dulling even while he watched it.

La Paglia handed Carlo twenty ten-thousand-lira notes.

And Carlo fairly ran from the study and the house, leaving the miser to croon over the dully glittering yellow bar as if it had been something alive, while the protons which made it gold emanated in an invisible stream into the atmosphere around.

"To the warehouse where our equipment lies," said Carlo to Farnese as he stepped into the car.

"You were successful?" said Farnese.

"Of course! Why not? Who wouldn't buy three liras' worth of pure gold for two?" He glanced at his watch. "Hurry away. In less than four minutes La Paglia will discover that he has paid two hundred thousand lire for a bar of ordinary iron."

THE ORDER has been left at the warehouse for the equipment to be delivered, and the bill had been paid. Farnese and Carlo were back in the laboratory.

Carlo was walking back and forth across the big room. At one point his strides took him over the spot in the basement where rested the vat of sulphuric acid into which he had thrown his victim.

But Carlo was oblivious of that. There was only one thing he was aware of now.

That was pain.

Pain was beading his face with sweat and wringing an irrepressible moan from his twisted lips every few seconds—pain from his left arm.

But even more agonizing than the pain was the mental torture he was undergoing at the possible significance of that pain.

"I told you!" Farnese was saying in a shrill, frightened voice. "I told you! You should not have let that large bar of 93 come in contact with your bare

flesh. I told you! Now it has burned you, or otherwise hurt you. Heaven knows what it has done to you!"

"Shut your lips!" Carlo groaned, in whose mind was mounting a terror even greater than that glinting in Farnese's ratlike eyes.

He had been serene in his belief that half an hour's contact with the bar would not harm him. There had been a chance, of course, that the radioactive emanations of the new element would injure him a little. But he had thought it could be only a little. And there had been no way to shield his flesh from them. You can't carry a gold brick to a prospective victim in a heavy lead case, for example. Instant suspicion would have been aroused.

Such had been his reflections when he left the laboratory with the bar of the stolen element heavy against the flesh of his arm. Now——

Now that arm was as stiff as wood and gave him such agony as he had never believed bearable.

"It may be burned to the bone!" chattered Farnese. "It may even be partially consumed in the radiating streams of escaping protons——"

"Will you stop your mouth!" rasped Carlo, gray of face.

He tried to flex the fingers of his left hand and found that now he could not. They were stiff, and presently his hand itself began stiffening. Meanwhile, waves of agony seared from arm to brain.

"Let me see your arm!"

"If you don't let me alone," grated Carlo to Farnese, "I'll—I'll——"

He squeezed his left hand in his right in an effort to ease his anguish.

This had all seemed so foolproof, in planning. The murder of Vichoni—the possession of Vichoni's laboratory for his own work—the swindling of a rascally old man who deserved whatever he got—the purchase of the needed equipment.

A simple chain! And he had carried it through as easily as he had thought he would. But in the least important, least considered step of the journey—the swindling of La Paglia—something had happened. What had No. 93, the element stolen from Vichoni along with his laboratory, done to him?

"Let me see your arm!" bleated Farnese again. He came close and plucked at Carlo's left sleeve.

Carlo cursed, lashed out viciously, cruelly, with his right arm and knocked Farnese, staggering, a dozen feet away.

"Let me alone!"

It was a shriek. But before the last word had left his lips, Carlo's voice lowered a little.

The pain seemed to be decreasing a bit.

He almost held his breath while he stood, looking vacantly at Farnese, and waited to see if it was true.

Yes; the pain was abating. He almost sobbed in his relief.

And then Farnese's wild shout rang in the laboratory. The smaller man was pointing at Carlo's right hand, and his eyes were starting from his head.

"Your hand——" Farnese choked. "Your hand——"

Carlo looked rigidly straight ahead of him. For a moment he dared not gaze at his hand for fear of what he should see.

The pain had gone almost entirely; yes. But his hand and arm were beyond feeling, for some reason. It was not that his flesh did not hurt any more—it was that it *could* not hurt. And Carlo dared not look at his hand to see why.

"The protons escaping from the bar of 93——" babbled Farnese. "The protons escaping—they must have entered the atoms of your flesh—look at your hand!"

And then, at last, Carlo looked.

His hand, solid and heavy and inflexible, glittered with a dull yellow sheen,

THE FLESH was preserved in shape, each vein rising where it should and each small hair showing on the back of his hand. But the skin did not look like skin; it looked like a metal sheath—a dull yellow metal.

"It's the Midas curse!" screamed Farnese. "The Midas curse! You dreamed of gold! You killed for gold! And the element you stole from the man you killed is turning you into the stuff!"

"Fool!" panted Carlo. "Fool! Are you a superstitious peasant, or a man of science? The protons escaping from the bar I held penetrated my flesh and made of its elements a metallic yellow one. Yes. But that is no supernatural curse. And it will not last. Already the pain is gone. Soon the surplus protons will radiate out of my flesh as they radiated into it, and my arm will be normal again. Stop shouting! Do you want the whole of Naples to rush in here?"

But Farnese was not to be quieted. All he could see was that gilded hand, attached to a gilded wrist, like a bit of sculpture hideous in its perfection. And all he could think of was that the murdered Vichoni, through his stolen element, had wreaked a terrible and personal vengeance on his killer from beyond the grave.

"The curse of Midas!" he screamed. And then he turned and ran raving toward the door.

Carlo bounded after him and caught him. Farnese must not be allowed to go shouting and raving into the streets. There would be an instant investigation and this was a place in which murder had recently been done.

But while Carlo was thinking this, in the back of his mind was a realization of something more horrible than any present danger from a murder investigation.

When he had run after Farnese, he had run heavily, with his left side drooping far down as though in his left hand

he carried a heavy weight. The weight was that of his own left arm.

"Let me go!" screamed Farnese. "The touch of you is a curse! The Midas touch! The Midas touch!"

He was quite mad, at least temporarily. Carlo saw that in the glazed sheen of his staring eyes and the white flecks on his lips. But for an instant he tried to reason with him.

"You can't go out like this. And my touch is not a curse. My hand—the trouble will pass. There is no reason to think that the protons, driving into the elements of my flesh from the bar of 93, will stay there any more than they stay in other elements when driven in by the Vichoni-bombardment process."

"The trouble will pass? You say it will pass?" Farnese's crazed laughter rang out, and he clutched Carlo's left sleeve and wrenched it up his forearm. "It will pass? Look at your arm!"

Carlo jerked his coat sleeve down. But not before he had seen that the skin of his arm glittered that dull yellow up as far as he could look.

"I'm going out of here!" shrieked Farnese, struggling like a madman. "I'm——"

Carlo's eyes went bleak and hard. "Will you control yourself?" he rasped.

Farnese's only answer was more mad screams and more struggles.

"Then—take it!" said Carlo, almost quietly, drawing a knife.

With the words he struck. And now he was a double murderer.

The big laboratory was very quiet. Carlo stood staring dazedly down at Farnese. As he stood, he braced his legs far apart and leaned to the right so that the growing weight of his left arm would not overbalance him. He might actually have fallen to the floor had he not so braced himself.

He took off coat and shirt and undershirt and looked at his arm.

From shoulder socket to finger tips it gleamed dull yellow. And now it

weighed, from the feel of it, as much as all the rest of his body put together.

"It's impossible," he whispered. "Scientifically impossible. There are many elements in flesh. It cannot be that protons from 93 could so change the nuclei of all those elements that the one uniform element should result. Impossible!"

"Impossible," came a whispering echo from the end wall of the great, still laboratory. It was almost as if it had come from the lips of the man lying dead with a knife through his heart.

Carlo's legs were trembling under the burden of his arm. He fell to his knees. His left hand hit the floor with a ponderous, thudding sound.

"Impossible!" he whispered, glaring at his arm. "Anyway, it must soon pass. Thirteen and a half minutes——"

On the end wall of the laboratory there was a big electric clock. The second hand whirled swiftly around its face, followed more sedately by the minute hand.

"Thirteen and a half minutes and my arm must be flesh again," whispered Carlo.

He sagged to the floor, unable to keep upright even on his knees under the weight of his arm.

"Thirteen and a half minutes——" babbled Carlo. "Thirteen and a half min——"

But it had been twenty minutes since the impossible change had noticeably begun. And eight more minutes passed while he lay panting and stared at the clock.

"Thirteen and a half——"

A quarter of an hour went by, and Carlo started crawling toward the body of Farnese.

His muscles ridged convulsively as he strained at the gigantic task of moving his arm over the floor. His arm scraped against the smooth cement with a harsh, brittle sound. At the shoulder, where the yellow metallic gleam faded imperceptibly into the tint of skin, the flesh showed taut and drawn.

He lay still, gasping under the weight of his own arm.

Protons fired into changing elements by Vichoni's process radiated away swiftly and left those elements in their original forms. But protons emanating from the new element, 93, and finding their way to near-by atoms, did not radiate away. They stayed. Carlo had his gold, hanging from his shoulder socket.

With his eyes fixed on the releasing knife in Farnese's heart, Carlo resumed his laborious crawl toward the dead man.

An announcement of importance comparable to the announcement of **THE SKYLARK OF VALERON** will be made in next month's issue of **Astounding Stories**.

The Legion of Space

*The conclusion of the epic
of the musketeers of space*

by Jack Williamson

UP TO NOW:

In the thirtieth century, John Star—then John Ulnar—receiving his commission in the legion of space, joins the guard of Aladoree Anthar, a lovely, mysterious girl, keeper of AKKA—the secret weapon of humanity, so terrific that the specifications for building it are intrusted to only one person in the system.

She is at once kidnapped by the "Purples," a faction led by Adam Ulnar, wealthy, traitorous commander of the legion, who plots to crush the democratic Green Hall Council, make his weak nephew, Eric Ulnar, emperor of the system. Eric carries her across space to the planet of his weird, monstrous, but highly scientific allies, the Medusae.

John Star, to rescue her and recover AKKA, follows with three loyal legionaries, Jay Kalam, Hal Samdu, and Giles Habibula, crossing space in the "Purple Dream," space cruiser of Adam Ulnar, which they capture. The ship falls wrecked into an ocean, and they leave it, with Adam Ulnar on board. He has learned that the Purples have been tricked by the Medusae, who plan to conquer the system for themselves, migrate to it with their monstrous hordes, wiping out humanity with a deadly red gas.

Entering the colossal city of the Medusae, the four rescue Aladoree and escape with her, through the flood drains, into a great river. They reach the shore. John Star kills a flying monster that attacks the girl.

Aladoree tries to set up the weapon, finds that her materials include no iron, that element not occurring on the planet. Helpless, without that necessary bit of metal, they watch the black fleet sail off into space, carrying unearthly hordes to the doomed system.

The planet's bitter, week-long night is upon them; they are unarmed, without shelter, in the edge of a savage jungle of thorns.

XXVI.

ALL FOR the want of a mortal nail!" commented Giles Habibula, in a voice that might have softened the cast-iron heart of a statue of the same material.

"Ah, me! That the lack of a blessed nail could mean so much!"

He was huddled on the black sand, a heap of dejection, carelessly holding a smoking piece of meat on a stick, above the sheltered driftwood fire.

"Poor old Giles Habibula! Better—ah, life knows, far better—that he should have died as a blessed babe! Better that the law should have taken its cruel, pitiless course, that time on Venus!"

"A fearful reward it is, in life's name, mortal fearful, for twenty years of loyal service in the legion. Accused for a precious pirate. Imprisoned and starved and tortured! Ah, yes, driven out of his own native system, to this hideous world of horror!"

"Poisoned by the very mortal air,



It struck with a blinding burst of white flame. Heroic death!

Illustrated by Elliot Dold

doomed to blessed insanity and death by green leprosy. Hunted by a million mortal monsters. Forced to scuttle like a rat through the blessed black city. Driven like a rat to drown in the sewers. Now face to face with a fearful death, in the cold of the night. And the one bottle of wine on the whole continent smashed before he'd had a taste of it!

"Mortal me! It's more than a man can endure. Too mortal much, in life's name, for a poor old soldier of the legion, sick and lame and feeble, with his wine spilled under his very eyes!

"And now, for the want of a nail, the blessed system is lost. Ah, me, for the want of one precious bit of iron, all humanity doomed to die before the invasion of the mortal Medusae! Ah, life knows, it's a mortal time! A mortal bitter time! Giles Habibula——"

There was a crackling sound from the driftwood fire, a whiff of acrid smoke. He stirred himself abruptly, rose with a final doleful wail:

"Ah, me! Misfortunes never come alone. Now the mortal meat is burned!"

And he went back to the bright-winged thing that John Star had killed,

to cut another steak from its furry body.

By the glittering, sapphire-and-ruby wings, that lay forlornly on the black sand, the others were standing in a dispirited little group, shivering in the increasing cold wind that blew out of the deepening crimson twilight.

From the river bar they were staring, hopelessly, at the Cyclopean walls and weird, gigantic towers of the black metal city, looming strangely ominous against the darkening scarlet sky, above the sinister dark barrier of the thorn jungle.

Overwhelming sense of failure, of despair, of inevitable doom overtaking them and all humanity, rested oppressively upon them, held them in dead silence.

The keen blue eyes that peered above Hal Samdu's red beard caught a black space flier—one of the Medusae's unearthly, colossal ships—moving toward the somber walls above the river. He pointed, silently followed it.

"Is that——" John Star began, with a sudden, painful leap of his heart. "Beneath it—could it be——"

"It is," Jay Kalam said gravely, "the *Purple Dream!*"

"Your ship?" cried Aladoree.

"Our ship. We left it wrecked, under the yellow sea, with Adam Ulnar on board."

"Adam Ulnar!" Her voice was edged with scorn. "Then he has gone back to his allies."

She looked at John Star oddly.

"It looks," he admitted, "as if he had. He could communicate with the Medusae by radio. He must have called them, got them to raise the ship and help repair it."

They watched the *Purple Dream*, flying under the vast black vanes of the Medusae's flier, its tiny torpedo shape no more than a silver mote. Blue flame burst from its rockets as it approached the black city, and it slanted down athwart the red sky, the other huge machine hanging near above it, on thun-

dering wings of eerie green fire. It slowed, came at last to rest on a tower of the black wall, in view of them. The black ship landed close beside it.

For a few minutes, they all stared at it, silent with the intensity of their desires.

"We must get that ship!" Jay Kalam whispered, at last.

"It would take us to the system," breathed Aladoree, voiceless. "We could find iron. We could set up AKKA. Save at least a remnant of humanity."

"We could try," agreed Jay Kalam. "They would follow us from here, of course, with their weapons that throw flaming suns! And the Belt of Peril is still above; we'd have to pass its zone of disintegration again. And all their fleet will be guarding our system, now. And the hordes of them, in the fortress on the Moon—— But," he whispered, "we could try."

"But how?" rasped Hal Samdu hoarsely.

"That's the first question. It's miles to where the ship is, across the jungle. On top of a sheer wall, a mile high. Nothing could reach it but a flying thing. And that black flier is beside it, apparently to guard it. How?"

His eyes fell, then, on John Star, who was staring fixedly at the wings of the creature he had killed, glittering beside them on the black sand.

"What is it, John?" he demanded, his low voice strangely tense. "You look——"

"Nothing could reach the top of that wall except a flying thing," John Star said slowly, absently. "But I think—I think I see a way."

"You mean—to fly?"

Jay Kalam searched his intent, haggard face, looked at the long, splendid wings at which he stared, sheets of sapphire, veined with red.

"Yes. I used to fly," said John Star. "At the legion academy—gliding. One

year I was gliding champion of the academy."

"Build a glider, you mean?"

"It could be done—I believe it could. Those wings are long enough. Strong. The thing's body was larger than mine. And the wind is blowing across the river, toward the jungle and the walls. There would be rising currents."

"Here are the wings. But the rest would——"

"Not much would be needed. The wings are already ribbed. Just posts to brace them together. We could cut canes in the jungle. Twist fiber cords to lash it together."

"There's not much time."

"No. It will soon be too cold to work. Not many hours. But we've no shelter, no weapons. We couldn't live through the night, if we waited. It seems the only thing."

"Yes!" He spoke suddenly, accepting the idea. "Yes, we shall try. But it's a fearful undertaking, John. You realize that. An uncertain craft—if we can build one that will fly at all. The danger you will be discovered. The difficulty of getting on board, getting the better of Adam Ulnar, with only a thorn dagger. Even if you get safely to the controls, there's the black flier on guard."

"I know," John Star said soberly. "But it seems the only thing."

SO THEY set out, in the face of every conceivable obstacle and danger, to do the impossible, first searching for tools, for sharp-edged shells, for rocks that would serve as knives and hammers, for the keen-bladed, iron-hard jungle thorns.

Measuring the bright wings, John Star drew on all his old knowledge for a design into which they would fit, sketched it with charcoal on a slab of bark.

Then, in increasing cold and darkness, with the glistening wings, with struts

and braces shaped from jungle cane, with strong, twisted fibers and members shaped from the tough thorn wood, he labored hour after hour to construct the glider, while the four others roved the beach and the jungle fringe for materials.

They did not rest until it was finished, a simple thing, frail, slight. Merely the four bright wings, braced together, with fiber thongs to fasten them to John Star's body. They bound it on him, and he ran with it a few times down the sand bar, into the wind, the others hauling him with a rope of twisted bark, to try its balance.

He thrust two thorn daggers into his belt, then fastened a long black spear to the frame beside him. He ran down the sand, the others running with the rope. He rose, cast it off.

His strange craft came up unsteadily, swerved and dived toward the sand. He righted it with a desperate twist of his body—its only control was by shifting his weight—and soared up in the strong current that rose over the jungle.

He looked down, once, at the tiny group on the bar of black sand—three men and a girl whose hopes had sent him up. Tiny, ragged, weary figures, alone in the bitter wind. He waved a hand, they waved in return.

Heart aching queerly, he soared on. He *could not* fail them, for they would surely die unless he took the ship. Jay and Hal and Giles—and Aladoree! He could not let them die, even if their safety had not meant the safety of all humanity. Over the menacing roof of the black jungle of thorns, now. Sheer disaster if he fell, here! When he found time to look again, the four were lost in the shadow of the jungle.

His former knowledge of gliding came back swiftly. He found his old pleasure returning, in the sweeping, soaring flight, found a lifting exhilaration even in the difficulty of managing his tricky craft, even in the grave peril

of a plunging descent into the jungle of thorns.

Keeping within the rising currents above the jungle's edge, he worked steadily upriver, toward the walls of the city—vague, now, in the increasing red gloom, the *Purple Dream* no longer visible. At first he had been doubtful of the frail machine, but he flew with increasing confidence, presently fearing only that the wind should change, or the Medusae see him. Then unexpected danger came.

Up from the black forest came gliding another creature, like the one that had supplied his wings. It circled him, arched above him, dived at him again and again, sting and talons ready, until he knew that it meant to attack.

He shouted at it, waved his arms. At first it seemed alarmed; but it returned, dived again, whistling past nearer than ever.

He unbound the black spear, then, set it before him. The thing dived a last time, slender sting curved, yellow, fearful talons stiffened. It came straight at him. He met it squarely, spear aimed at its single black eye.

The point went home. But the rushing body struck his frail craft, with a force that made its braces crack. Flung off balance, John Star slipped toward the jungle, after the body of his attacker.

Equilibrium recovered, just clear of the thorns, he rose again. But the fiber-bound frame had been weakened, warped, by the impact. It creaked alarmingly as he soared; its flight was more startling and unstable than ever.

But at last he reached the stronger, gusty current that rose above the black walls. Up he was carried, up, fearing that each moment would see his bright wings folding, his body spinning down toward the yellow river.

So he came at last level with the tower, made out the *Purple Dream*, tiny spindle of silver, lying on the huge

black platform, in the shadow of the colossal black flier that guarded her. The unearthly ebon city stretched away beyond, an eldritch army of black giants, crouching ominously in lowering crimson gloom.

Over the platform he swept, and down.

The gust carried him too fast, almost he was swept over into the city; the glider creaked alarmingly.

But his feet touched black metal in the shadow of the *Purple Dream*. He slipped free of the binding thongs, discarded his wings, ran silently toward the air lock, thorn dagger in hand, alert for the unknown obstacles ahead.

XXVII.

THE AIR LOCK, to John Star's relief, was open, accommodation ladder touching the metal platform. He was up the steps in an instant, across the lowered valve, and on the long, narrow deck inside, beneath the curve of the hull, where he came face to face with Adam Ulnar.

At their parting, months before, on the bottom of the yellow sea, Adam Ulnar had seemed a beaten man, shattered, crushed with the discovery that he and his cause had been betrayed by the Medusae. A vast change had come in him since.

Always tall, impressive of figure, he was once more erect, confident, determined. Freshly shaven, ruddy, neatly groomed in legion uniform, he met John Star with a hearty smile of surprised welcome on his handsome face.

"Why—why, John! You surprised me. Though I had hoped——"

He started forward, extending a well-kept hand in greeting. And John Star leaped to meet him, menacing his throat with drawn thorn dagger.

"Keep still!" he whispered harshly. "Not a cry!"

He was acutely conscious of the dif-

ference between them. A strange figure, he presented, he knew; grimy, exposure-blackened, haggard from fatigue, half naked; appearing, with shaggy head and many months' growth of beard, more beast than man. An uncouth animal, facing a polished, confident, powerful man.

"Adam Ulnar," he breathed again fiercely. "I'm going to kill you. Twice false, you deserve it. Have you anything to say?"

He waited, trembling, fearful that he could not strike this serene, smiling man, whose personality roused instinctive admiration, quick pride in their kinship—for all his black treason.

"John!" protested the other, his voice urgent, yet smooth, persuasive. "You misunderstand. I'm really delighted that you came. My unfortunate nephew told me, a little while ago, that you had been here, that you had been drowned in the sewers. Knowing you and your companions, I could not believe you had perished. I was still hoping to be of some assistance to you."

"Assistance!" echoed John Star harshly, still threatening his throat with the dagger. "Assistance! When you are responsible for the whole frightful situation?"

"I wanted all the more, my boy, to help you, because I realize my responsibility for what has happened. It's true that you and I have differing political views. But I never had any desire to betray humanity to the doom the Medusae plan. I have no other purpose, now, than to help undo what I've been the cause of."

"How's that?" demanded John Star, with a sick fear that this smooth, compelling voice would win his confidence and betray it again.

Adam Ulnar made a gesture to include the ship about them.

"I've already done something. You must admit that. I've had the cruiser raised, repaired, in the hope that it

might carry AKKA back to the system in time to save it."

"But the Medusae raised it."

"Of course! They tricked me; it was only fair for me to trick them, in return—if I could. I got back in communication with them, agreed to join them. I agreed to aid them, with my military skill, in the conquest of the system. And I asked them to raise the *Purple Dream*, fit it up for my maintenance.

"They raised the cruiser, and repaired her, well enough. But they don't trust me so far as we Purples trusted them. The black flier outside has been standing guard over me, day and night, with its weapons that hurl those flaming suns."

"You've seen Eric?" demanded John Star suspiciously. "He's with you?"

"No, John. He isn't with me. He told me how the Medusae had made him try to force the girl to reveal her secret. About your arrival, and escape. And how he had run to the Medusae, to warn them, because he was afraid of them."

"The cowardly beast!" muttered John Star. "Where is he?"

Adam Ulnar nodded, a shadow of pain on his handsome face.

"That's what he was, John—a coward. Even though his name was Ulnar. A coward! He made the first, foolish alliance with the Medusae, because he was a coward, because he was afraid to carry out my own plans for the revolution.

"I knew, then, John, that I'd made a mistake, I knew it was you who should have been emperor, not Eric. Even then, it might not have been too late—if you had been willing."

"But I wasn't."

"No, you weren't. And perhaps you were right, John. I'm losing my faith in aristocracy. Our family is old, John; our blood is the best in the system. Yet Eric was a craven fool. And

the three men with you—common soldiers of the legion—have shown fine metal.

"It hasn't been easy for me to change, John. But I have. From now on, I shall support the Green Hall."

"Yes?" John Star's voice was hard with skepticism. "But answer my question! Where is Eric? Both of you are——"

"Eric will never betray mankind again, John." The voice was edged with pain. "When I found how he had sent the Medusae after you, when you were escaping—I killed him." He winced. "My own blood as he was—I killed him. I broke his neck with my own hands."

"You—killed—Eric?"

John Star whispered the words very slowly, his haggard eyes anxiously scanning Adam Ulnar's face, now stern with its pain.

"Yes, John. And killed part of myself with him, for I loved him. Loved him! You're the heir, now, to the Purple Hall, John."

"Wait!" snapped John Star savagely, pressing the dagger closer, while he searched the handsome, pain-shadowed face.

"Very well, John."

With a curious little smile, Adam Ulnar folded his arms, backed to the wall, stood watching him.

"You don't trust me, John. You couldn't, after all that has happened. Go ahead, then, and drive your weapon home, if you feel that you must. I shan't defend myself. And as I die I shall be proud that your name is Ulnar."

JOHN STAR came toward him, weapon lifted. He gazed into the fine, clear eyes. They did not waver. They seemed sincere. He could not kill this man! Though doubt still lurked in his heart, he lowered the blade.

"I'm glad you aren't striking, John,"

Adam Ulnar said, smiling again. "Because I think you will need me. Even since we have the cruiser repaired, there are terrific obstacles ahead of us, yet."

"The black flier, here, is guarding us. And even if we're able to slip away from it, they will send a fleet after us. And the Belt of Peril is above—it is weaker, I've learned, above the poles of the planet, but even there a fearful barrier."

"Even if some succession of miracles let us get to the system, humanity is already crushed, disorganized. We would receive no aid; we might be attacked, even, by the miserable wretches insane from the red gas. And the great fleet that went ahead is guarding the system; the hordes of the Medusae are safe in their great fortified outpost on the Moon, from which their immense guns are shelling all the planets with the red gas."

"If we lose much time, John, we'll be too late. We'll be the sole survivors, with no chance of surviving very long, ourselves. Already humanity is going mad, dying of the green leprosy, on every planet. It can't be long, until—the end——"

"I'll trust you, Adam," said John Star, striving to put down his mistrust that remained. Added, swiftly: "We must pick up Aladoree and the others. They're down by the river, without shelter or any real weapons. They'd soon die, in this night!"

"To move, now, with the black flier on guard," protested Adam Ulnar, "would be—suicide! We must wait some opportunity——"

"We can't wait!" He was harsh with desperation. "We've the proton gun. If we took them by surprise——"

Adam Ulnar shook his head. "They dismantled the proton-blast needle, John. Removed it. The cruiser is unarmed. They took even the racks of hand weapons. Your thorn is the only

weapon we have. Against the suns they throw!"

John Star set his jaw. "There's one way!" he muttered grimly. "A way to move so fast they'd have no time to strike at us, even with them."

"How's that?"

"We can take off with the *geodynes*."

"The *geodynes*!" It was a startled cry. "They can't be used to take off with, John. You know that. We'd fuse the hull with friction heat! Or crash into the ground like a meteor!"

"We'll use the *geodynes*," said John Star harshly. "I'm a pilot. Can you run the generators?"

Adam Ulnar looked at him for a moment, strangely; then he smiled, took John Star's hand, squeezed it with a quick strong pressure.

"Very good, John! I can operate the generators. We shall take off with the *geodynes*. I wish you had been my nephew."

John Star felt a responding emotion, checked by his little doubt that refused to die. So many had trusted this man; his treason had been so appalling!

They parted. In the little bridge room, John Star inspected the array of familiar instruments, tested them swiftly, one by one. All the iron, he saw, had been replaced by some other metal. But everything seemed to function as it should. He peered through a tele-periscope.

The Medusae's guarding flier lay beside them, one vast strange vane extending overhead. Against the now darkly scarlet sky it loomed portentously gigantic, like some monstrous hybrid insect swollen to Cyclopean dimensions.

The low, clear music of the *geodyne* generators became audible, rose to a keening whine. Adam Ulnar spoke through the telephone:

"Generators ready, sir, at full power."

With a brief, grim smile at the "sir," checked, again, by mistrust, John Star was swiftly estimating the position of

the bar on the river, planning the thing he meant to do. The danger of it, he realized coldly, was terrific; the slightest error meant instant, flaming annihilation.

Fingers on the keys, he peered back into the tele-periscope.

He remembered the air lock, then, touched the button that closed it. That night, he knew, betray them. But if he left it open the terrific air resistance would fuse the valve, or wrench it away.

Tensely he waited, one second, two, and three. A long, slender black cone projected abruptly from the huge black moon of the flier's body, swung toward them. A weapon!

Four! Five! He heard the clang of the closing valve and touched a key.

The tower platform, the black flier, vanished instantaneously. Though, since its terrific force was applied equally to the entire ship, there had been no perceptible shock; the *geodynes* had flung them away with a rapidity incalculable—and perilous!

Scarlet darkness spun about them. A black shadow flung at them.

Driven with lightning speed to meet this desperate emergency, John Star's fingers leaped across the keys. Years of training now found their test. He had often imagined, in the days at the academy, that this thing might be done, half longing for a chance to try it, half fearful that opportunity would some day come.

After the merest instant of acceleration, he reversed the *geodynes* for another split second, to check an inconceivable velocity.

And the *Purple Dream*, a moment before upon the black wall, was plunging down toward the river, still at a frightful speed, her hull incandescent from friction with the air. Desperately, he flung down the rocket firing keys, to check the momentum before they struck.

A desperate game, this playing with

the curvature of space itself, in the very atmosphere of a planet! Human daring and human skill, pitted against titanic forces. Savage elation filled him. He was winning—if the rockets stopped them in time.

Down on a dark sand bar hurtled the incandescent ship. Down to the bank of a freezing river. Rockets thundering at full power to the last moment, she struck the sand heavily, plowed into it, steam mantling her red-hot hull.

By the narrowest margin—safe!

Safe, at any rate, until the Medusae had time to strike.

Hot valves flung open; four persons came hastily aboard. Half-naked, haggard persons, dead-weary, numb with cold. The air lock clanged behind them; the *Purple Dream* thundered away again, blue blasts scorching the sand.

Geodynes cut in at once, she plowed with inconceivable velocity upward through the planet's sullenly crimson atmosphere. John Star felt a moment of wild triumph, before he recalled the unearthly terrors of the Belt of Peril, ahead; recalled the myriad dangers of frozen, boundless space, beyond—six light-years of it; remembered the fleets of the Medusae, guarding the system, ahead, and the hordes of them waiting in the fortress on the Moon.

Behind, he saw colossal mechanisms stirring along the walls and towers of the weird metropolis. A full score of black fliers took off, to follow, on thundering bursts of eerie green flame. Omniously vast, proved more than a match for the *Purple Dream* in speed, armed with those weapons that flung fearful crashing suns of annihilating opal flame!

XXVIII.

THE RED HAZE ahead faded, grew dim. The *Purple Dream* burst upward into the freedom of space, where her incandescent hull could cool. The planet

drew away beneath, a huge ball of dull, baleful orange-red.

Up from it rose the swarm of giant black machines, in ever-swifter pursuit, a menacing swarm. The recklessly sudden start of the cruiser had left them too far behind to use their fearful weapons at once. But swiftly, with their greater speed, they were closing the gap.

Ahead was the Belt of Peril.

Double line of vast sapphire stars across the sky. Narrow diamond rays woven between them, a barrier of light, a frail shell of ineffable prismatic splendor, inclosing the whole planet. Terrible zone of radiation that disintegrated any matter entering it, destroying the tissue of human nerves with unutterable, consuming agony.

Remembering Adam Ulnar's information that it was weaker at the poles of the planet, John Star set his course to strike it above the north pole, drive the cruiser forward at the utmost power of the *geodynes*. He was sick at thought of plunging into the pain and the horror of the barrier, sick with dread of what Aladoree must suffer within it. But there was no choice.

The *Purple Dream* drove into the wall of diamond rays, John Star still alone on the bridge.

Fiery mist swirled suddenly away from his body, from every object in the room. Mist of tiny, dancing motes, that glittered with every color of the spectrum. White, searing pain probed his body, screamed in his ears, flamed blindingly before his eyes.

Atom by atom, the disrupting vibration was destroying the ship and their bodies. Slowly consumed nerves raged with agony.

Limp with suffering, John Star fought his tortured body, fought to keep awareness, to keep the hurtling cruiser within the narrow passage of wave interference that Adam Ulnar had told him of.

His body, luminous, half transparent,

exhaling the shining vapor of disintegration, was immersed in sheer agony. He was weak, trembling, almost too faint to move the keys. Red flame burned away his very brain.

And part of him was startled, inexpressibly, by a sudden laugh, strange and harsh and wild. A mad laugh! The laugh of a lunatic! It shook him with the sickness of pure horror, for he knew that it was himself who had laughed.

He had just thought of a terrific joke!

Like the luckless members of the first expedition, the sane part of him knew, he was going mad. Months of exposure to the red gas that permeated the atmosphere of the Medusae's planet had finished its fearful work. Gone mad! Doomed to die a hopeless lunatic, consumed by unpeakable green leprosy!

He was laughing. Laughing at a monstrous joke. The joke was the death of the system, by madness and green leprosy. And the death of those who had tried to save it, by the same hideous decomposition of body and mind. A fearful joke! A stupendous joke!

Millions, billions, laughing foolishly, inanely, as their flesh dried to green scales and flaked away. And those who had thought to save them—dying first! What a joke! Men laughing, while they endured red pain. Men laughing, while the flesh came away from their bones. Men laughing, until their bodies fell apart, and they laughed at death!

What a colossal joke!

His hands had slipped away from the controls; he was doubled up with laughter.

Would the Medusae be laughing, as they rained the bombs of red gas on the planets? Would they see the joke—men laughing as they fell to green fragments? Or could they laugh, with their monstrous, gelatinous bodies?

He must ask Adam Ulnar. Adam Ul-

nar could communicate with the Medusae. He could find out. He could tell them the joke—the colossal joke, humanity laughing as it died. He could tell them the joke, and they could laugh, too.

He tried to stand up, but he was laughing so that he could not rise.

He rubbed his hands together. They felt dry, papery. Already the scales were forming on his skin. His flesh would flake away until his bones were bare. He was a joke, himself! What a magnificent joke! A man laughing, when he found that his body was crumbling away!

He lay on the floor and laughed.

Then, dimly, he became aware of something he must do. Red flame was lapping at his brain; his body was sick with suffering. And there were others. Others? Yes, Jay and Hal and Giles. And Aladoree! And the system. He could not fail them! But what was the thing he must do?

It was to drive the cruiser on, he remembered dimly, though the Belt of Peril. Then this intolerable pain would go away from him. Away from the others. From Aladoree! She was so beautiful, so frail, so weary. He must not let her suffer this.

He fought the laughter. He tried to forget the colossal joke. He struggled against the agony that consumed his nerves. Doggedly, he dragged his limp body back to the controls.

On through the lacing diamond rays of the Belt of Peril, he drove the *Purple Dream*, watching the weirdly semi-transparent instruments through a haze of fiery particles, handling the controls with weirdly luminous hands, shaken, again and again, with laughter at that stupendous joke.

He knew, finally, that they were beyond the vibration barrier. The red pain faded from his body; the unearthly luminescence departed from the instru-

ments; the glittering mist dissipated. But still he sobbed with laughter.

JAY KALAM came presently into the bridge, haggard and pain-drawn, but calmly efficient. Already, in the hour that they were driving out to the Belt of Peril, he had found a moment to shave and don a new uniform. He was neat again, trim, tall, darkly and gravely handsome.

"Well done, John!" he said quietly. "I'll take the bridge a while. I've just been talking to Adam Ulnar about outrunning the fleet behind us. He says that——"

John Star had struggled desperately to listen, to keep silent and understand what Jay Kalam said. But the joke—it was so terribly funny. He burst into mad laughter again, a wild tempest of laughter that sprawled him on the floor.

He must try to tell Jay Kalam about the joke. Jay Kalam could appreciate it. Because, very soon, he would be laughing, too, as his body scaled away with the green leprosy. But, for the racking laughter, he could not speak.

"John!" he heard Jay Kalam cry, aghast. "What's the matter? Are you—hurt?"

And Jay Kalam helped him to his feet, held him until he could stop laughing, shake the tears out of his eyes.

"A joke!" he gasped. "An immense joke! Men laughing, as their bodies fall apart!"

"John! John!" The grave voice bore inexpressible horror. "John, what is it?"

He struggled to forget the joke. There was something else he had to tell Jay Kalam, something he must tell him. He stopped another fit of sobbing laughter.

"Jay," he whispered, "I'm going mad. It's the red gas. I can feel my skin getting rough. With the flakes. You

must take the controls. And have Hal lock me in the brig——"

"Why, John——"

"Please lock me up. I might harm Aladoree. And fly on to save the system."

The laughter came back; he clung to Jay Kalam, sobbed out:

"I must tell you the joke. So hugely funny. Millions of men, laughing, while they die. Little children, even, laughing, until the flesh drops off their bones."

It overcame him. He fell shaking on the floor.

The next he knew, beyond laughter and delirium, he was strapped to a berth in a cabin, and Giles Habibula was bathing his body with a pale, luminously blue solution, evidently the same which Adam Ulnar's close-mouthed physician had used upon his strangely wounded shoulder, long ago in the Purple Hall.

"Giles!" he whispered, his voice oddly weak.

"Ah, lad!" he wheezed, smiling. "You know me, at last! It's time you did. You'll laugh no more—promise old Giles?"

"Laugh? What have I to laugh at?"

Vaguely he remembered some joke, but what it was, he could not say.

"Nothing, lad!" gasped Giles, relieved. "Not a mortal thing! And you'll be on your blessed feet again, by the time we reach the system."

"The system? Oh, I remember! Does Jay think we can escape the black fleet?"

"Ah, lad, we left them long ago. We flew close to the red sun. They could not follow—its gravitational field stopped their propelling mechanisms.

"And mortal near caught us! Ah, what a fight we had to drive clear of it!"

"So I was laughing? I remember. The madness of the red gas! Am I sane again, Giles?"

"Ah, yes, you seem to be. Just now. Adam Ulnar had this solution. It neutralizes the gas. If one has not been exposed too mortal long! The green flakes went from your body days ago. But we were afraid——"

"Did any of the others——"

The wheezing voice fell. "Yes, lad. The lass——"

"Aladoree?" Pain throbbed in John Star's hoarse cry.

"Ah, yes! All of the rest of us escaped; we all used this solution. But the lass caught the madness when you did, in the Belt of Peril."

"How is she, Giles?"

"I don't know." He shook his head. "The green flakes are all gone from her skin. But still she is not herself. She lies, as you lay, in a dead trance we can't wake her from. She was mortal weak and weary, you know, when it took her."

"Ah, lad, it's bad. Mortal bad! If she doesn't wake she cannot build the deadly weapon. And all our trouble has been in vain! I like the lass. Life knows I'd hate to see her die!"

"I—I——" whispered John Star, through his agony of apprehension and despair, "I—like her, too, Giles!"

And he sobbed.

JOHN STAR was able to return to the bridge by the time they entered the outskirts of the system, passing Neptune and Pluto. All the familiar planets, they saw in the tele-periscope, were red. Even Earth was a dull spark of crimson, ominous, baleful.

"Red!" breathed Jay Kalam, in a tone edged with horror. "The air of every planet is full of the red gas. Soon it will be too late. Too late to save humanity from madness and death."

"And still," John Star whispered bitterly, "Aladoree is no better. Still sleeping in that dead trance."

"We'll land on Earth, anyhow. Find

a piece of iron. And wait. Perhaps she will recover."

"Perhaps! Though her pulse, Giles says——" He broke off, muttered fiercely: "But she can't die, Jay! She can't!"

They were slipping past the Moon, five days later, toward Earth.

Aladoree still lay unconscious, heart and breath frighteningly slow. Her frail body, weakened by utter exhaustion, by the strain and anxiety of her long captivity, by the months of exposure to the slow poison of the red gas, was fighting desperately for life itself. The others watched her, bathed her lax body in the neutralizing solution, forced a little food down her throat. They could do no more.

The Moon was a red world of menace. John Star scanned it through a tele-periscope. Its grimly rugged mountains were shrouded in deadly crimson gas; the human cities were lifeless ruins. On a bare, cruel plateau of lava, he saw the Medusæ's fortress.

An unearthly citadel! A replica of the weird metropolis on their own planet of horror. Titanic walls and Cyclopean towers of metal, portentously black. Bristling with the fantastic, colossal confusion of black mechanisms—ships and weapons!

"The hordes of them are waiting there," whispered Jay Kalam. "Making the red gas. Bombarding the planets with shells of it. And their fleet—on guard. If they discover us——"

His voice fell. He had seen the same thing that had shocked John Star with horror. A flaring burst of eerie green flame, above a black tower. An ominous black flier rising, coming toward the Earth!

"Perhaps they have, already! But we have time to land ahead of them, look for a piece of iron."

"But Aladoree is still unconscious," John Star muttered. "Unless she

wakes, to build AKKA, we have no weapon. Unless she wakes——"

On they plunged, toward the weirdly red Earth, fearfully watching the black flier crossing after them from the crimson Moon.

XXIX.

INTO THE atmosphere of Earth, strangely and ominously crimsoned, the *Purple Dream* dropped, over western North America, to land at last by the Green Hall, on the brown mesa beneath the mile-high, rugged Sandias.

John Star had volunteered to leave the cruiser, to look for iron. There had been none aboard, when the ship came back into their possession. Space craft are nonmagnetic, since magnetic fields interfere with the operation of the *geodynes*; and the Medusae, refitting the vessel, had removed the few bits of iron about the instruments, precious to them.

"Carry this," Jay Kalam told him, and gave him his old thorn dagger. "And be cautious, if you meet men. They will be mad, dangerous. And hurry. We must get the iron and slip away, somewhere, before the black ship comes. Hide, and wait for Aladoree to recover."

Dropping outside the air lock, John Star paused to gaze in horror at what remained of the system's once proud and splendid capital.

The sky was clouded with a haze of fatal scarlet, through which the mid-afternoon sun burned with a bloody and sinister light. Bare mesa and cragged mountains were strange and grim and incredibly desolate under the ominous illumination.

The Green Hall had been destroyed by a great shell from the Moon.

In the edge of the grounds, that once had been a luxuriantly verdant garden, a ragged crater yawned, rimmed with torn, raw masses of rock. Beyond the pit the great building tumbled down in

colossal ruin, a mountain of shattered emerald glass, from which protruded skeletal arms of twisted metal.

A moment he waited, horror-struck. Then, remembering the urgent need of haste, he plunged forward through masses of neglected weeds, among the bare skeletons of trees killed by the explosion, across lawns piled with rocks flung from the crater and shattered fragments of green glass.

Curious, he soon had cause to reflect, how difficult it is to find even a nail when it must be had. He found assorted metal objects, a bronze lamp stand, a little figurine of cast lead, the charred, twisted aluminum frame of a wrecked air sled. Even an iron girder flung from the building, many times too heavy to carry.

He hurried on, desperately searching the devastated grounds for any fragment of iron small enough to move, with an occasional, anxious glance at the lurid scarlet-hued sky. If the Medusae had seen them, if the black ship was coming to attack them——

He stumbled around a great heap of broken green glass and came face to face with green horror.

It had been a man; a gigantic man; it must have survived through the days of terror by sheer brute strength. Nearly seven feet tall, its body was half naked, half clad in the ragged, filthy fragments of a legion uniform—the uniform of the Green Hall guards. Its skin was a mass of bleeding sores, scabbed and crusted horribly with hard green flakes. Red-rimmed eyes, green-clouded, hideous, stared from the green horror of its face, half sightless. Its lips had been eaten away. With naked fangs it was gnawing avidly at a fresh red bone that John Star knew, shudderingly, from its shape, to be a human humerus.

Sight of this man-beast, crouching, gnawing, snarling, sickened him with infinite pitying horror. It meant more

than one man's fate. It epitomized the doom of all humanity, under the insidious attack of the Medusae—a doom that would fearfully soon be complete.

Involuntarily he had cried out at sight of it. Then, realizing the danger of it, he tried to slip away. But it had already become aware of him. It made a curious, half-vocal, questioning sound—its vocal organs were evidently too far eaten away to admit of articulation. The red-rimmed, clouded eyes peered swiftly about, saw him. It came toward him with a lumbering, shambling gait.

"Stand back!" he shouted sternly, tension of panic in his voice.

The effect of his sharp command was curious. The shambling figure straightened suddenly to military erectness, came to attention, stiffly raised an unspeakable, green-crustled paw in salute. But it was no more than a mechanical reaction left over from its old life. It slumped back, into the same stooping posture, lumbered on toward him.

"Attention!" he shouted again. "Halt!"

A moment it paused, then came on faster. Voiceless, protesting sounds came from its lipless mouth. He stood, faint with horror, trying to understand its cries, until it uttered an abrupt, eager, animal squeal, and broke into a run.

He knew, then, that it was stalking him for food.

Swiftly he looked behind him, for a path of escape, realized with a wave of sick apprehension that it had trapped him. Mountains of broken green glass hemmed him in. He must face it.

True, he had the black thorn. But he was not so strong, he knew, as he had been before his long sickness. And this green-scaled thing was well over twice his weight. The green death, apparently, had not greatly wasted away its strength.

He hoped, as they came to grips, that the tricks of combat he had learned in

the legion academy would make up his disadvantages. But, as one green paw seized his dagger wrist in a clever, cruel hold, he realized that this thing had been another legionary, that its crazed brain had not lost its animal cunning in battle.

The dagger dropped from his paralyzed hand. Rough green arms locked him in a pitiless embrace. One of his own old tricks. A knee in his back, the other locked over his thighs; his shoulders twisted, twisted, until his back should break.

He struggled vainly in the merciless hold, blind with pain and panic. The hard green scales were harsh against his body, foul odor of decomposition sickened him. For a moment, as his efforts failed, he was faint, hopeless.

Naked fangs slashed at his shoulder; the thing made an eager whine.

Something of his old cool composure came back, then; through the mist of agony he imagined himself back at the academy, listening to an old instructor's directions: "Twist your body, so, drive your elbow into the plexus, so, slip your arm here, so, then lock your leg and turn."

He did it, as the dry old voice whispered in his memory, hardly aware where he was, knowing only that the torturing pain would cease when he had done it, and he would be free to search for a nail.

Snap!

He rose slowly, beside the quivering, hideous body, awareness returning as agony ebbed away.

AMONG THE shattered green ruins, John Star staggered on again, scanning the battered earth. He must hurry! If the black flier came— It was a child's toy that caught his eye. A rusty, broken little engine, that could no longer move its tiny burden—but might yet save the system.

He tore the shaft out of it, assured

himself that it was iron, hastened back toward the cruiser.

Clambering over a heap of broken green glass, he looked up, and saw the machine from the fortress on the Moon. It was slanting down, across the crimson-dyed sky, already very near. A gigantic thing, a sphere, with vast vanes and enigmatic mechanisms projecting. It was monstrous, like some fantastic beast parodied in black metal.

He broke into a dogged run, staggered into view of the *Purple Dream*. Tiny, torpedo-shape of silver, a pygmy in the shadow of the huge mechanism plunging down above the Sandias. It was still beyond the yawning crater, a quarter mile from him.

Hopelessly, he staggered on. The cruiser was unarmed; the terrific weapons on the Medusae's flier could annihilate it in an instant.

Wondering dimly, as he ran, he saw a little group appear on the lowered valve of the air lock, hurry down the accommodation ladder. Jay Kalam and Hal Samdu and Giles Habibula, he recognized, carrying the inert figure of Aladoree.

The valve closed above them; Adam Ulnar had not appeared.

They ran away from the cruiser; evidently it was about to take off, with Adam Ulnar at the controls. But why? Still running grimly on, John Star remembered his old doubt. Had his kinsman turned again? Had he put the others off, to go back to the Medusae? John Star could not believe that. Adam Ulnar had seemed sincere. But—

Then the *Purple Dream* moved.

It plunged forward in the fastest take-off he had ever witnessed. It leaped away so swiftly that his eyes lost it. They caught it again, flashing toward the black flier, its hull already incandescent.

Even as he realized that it was driven, not by the comparatively feeble rockets, but by the terrific power of the

geodynes, it struck the central sphere of the black flier, with a startling, blinding burst of white flame.

The machine from the Moon, twisted, flaming, fell with a curious deliberation out of the red sky, struck the barren slopes of the Sandias, rolled down them, looking oddly like a black monster struggling in slow agony of death.

John Star's old, haunting doubt was gone.

"You are the last Ulnar," Jay Kalam greeted him, when he came up to the lonely little group on the edge of the mesa. "Adam Ulnar said he was trying to pay a debt to the system. And he told me to tell you, John, that he hoped you would be happy in the Purple Hall."

John Star dropped on his knees by the limp, white-faced girl on the ground, whispered anxiously:

"Aladoree! How is she?"

"Ah, me, lad," dolefully wheezed Giles Habibula, fixing a pillow under her head, "she seems no better. No better! The same trance she's been in for mortal weeks. She may never wake! Ah, the poor lass—"

He flung a tear out of his fishy eye.

They tried to make her comfortable, under a little shelter made from the dead branches of a shattered tree. They found rude clubs, to defend her, if the green beasts should find them. Hal Samdu and Giles Habibula went to search for food and water, returned, at sunset, empty-handed.

"Mortal me!" wailed Giles Habibula. "Here we are lost in a desert, without food or drink for ourselves or the lass! Ah, me! And fearful mad green creatures are roving all about us, hunting for mortal human food!"

The Moon came up in the scarlet dusk, a huge, fearful, blood-red globe, above the rugged ramparts of the dark Sandias. And they saw, against its sinister face, a little cluster of tiny black specks, creeping about, growing,

expanding. A little swarm of black insects that became steadily and ominously larger.

"A fleet coming down from the Moon," whispered Jay Kalam. "Since the one ship did not return— A whole fleet of the gigantic black machines, coming to make sure we are destroyed. They'll be here in an hour."

XXX.

"SHE MUST wake," whispered John Star. "Or she never will!"

"I'm afraid so," agreed Jay Kalam. "Probably the fleet will destroy the very mesa, with those suns of flame. To be sure we trouble them no more. But there's no way—"

"*She must wake!*" John Star muttered again.

With a sort of fierce tenderness, he lifted her from where she lay. Her body was limp, relaxed. Her eyes were closed, her pale, full lips parted a little, her fine skin very white. Her pulse was beating almost imperceptibly; she was breathing very slowly. Deep, deep, she was still sunk in the coma in which she had lain so long.

So quiet, so helpless, so beautiful! He held her fiercely in his arms and stared in mute, savage defiance at the menacing Moon, red and pocked with black. She must not die! She was his! Forever—his! So warm, so frail, so lovely! He would not let her die.

No! No, she must wake, and use her knowledge to build the weapon and destroy these menacing horrors. He must wake her, so she could be his forever.

Unconscious, he had been whispering it to her. And he spoke louder now, in a desperate appeal. He called to her in a mad attempt to break through her coma, to make her realize the desperate need that she should wake.

"Aladoree! Aladoree! You must wake up. You must. You *must!* The

Medusae are coming, Aladoree, to kill us with the opal suns. You must wake up, Aladoree, and build your weapon. You must wake up, Aladoree, to save humanity! You mustn't die, Aladoree! You mustn't! Because I love you!"

He always believed that his appeal had reached through to her sleeping mind. Perhaps that was it. Perhaps, as a medical scientist has suggested, it was the irritating stimulation of the red gas in the atmosphere that roused her, after the change from the pure air on board the *Purple Dream*. It does not greatly matter.

She sneezed a little, and whispered sleepily: "Yes, John, I love you, too."

He almost dropped her in his eager start at her response, and she came wide awake, staring about in amazed alarm at her strange surroundings.

"Where are we, John?" she gasped. "Not—not back on that planet—"

She was gazing in horror at the scarlet Moon in the red-bathed sky.

"No, we're on the Earth. Can you finish the weapon, quickly, before the Medusae come? We brought the parts you made by the river."

She stood up, looked around her, clinging uncertainly to John Star's arm, still dazed with astonishment.

"Can this be Earth, John, with the red sky? And that the Moon?"

"It is. And the Medusae are coming down."

"Ah, the lass is awake!" wheezed Giles Habibula joyfully.

And Jay Kalam hurried forward with the odd little device that Aladoree had built back on the Medusae's planet, that had been useless for want of a little iron.

"Can you finish it?" he asked, still calmly grave. "Quickly? Before they come?"

"Yes, Jay," she said, equally calm, seeming to recover from her first bewilderment. "If we can find a bit of iron—"

John Star produced the broken shaft of the toy engine. She took it, examined it swiftly.

"Yes. This will do."

In the fatal light of the blood-red rising Moon the four stood silent about Aladoree and her weapon, tense with hope and dread.

They were alone on the mesa, a barren waste bathed in terrible light. Behind them was the murdered Green Hall, a tumbled black mass looming monstrously against the red-washed sky. Before them the mesa sloped up to the rugged Sandias, beneath the baleful disk of the scarlet Moon, dark with the growing swarm of the Medusae's fleet.

Dread silence hung over them, the awful silence of a world treacherously slain. Only once was it broken—by a fearful, hideously half-vocal sound of agony and terror from the ruin.

"What was that?" the girl whispered, shuddering.

It was one mad thing, stalked by another human beast, John Star knew. But he did not tell them.

Aladoree was busy with the weapon—a tiny thing. It looked very simple, very crude, very frail. The parts of it were fastened to a narrow piece of wood, which was mounted on a rough tripod, so that it could be turned, aimed.

John Star examined it, amazed again at its simplicity, incredulous that such a thing could ever overcome the terrible, ancient science of the Medusae.

Two little metal plates, perforated, so that one could sight through their centers. A wire helix, between them, connecting them. And the little cylinder of iron. One of the plates, and the little iron rod, set to slide in grooves, so that they could be adjusted with small screws. A rough key, to close a circuit through the rear plate. That was all.

Aladoree was making some adjustment to the screws. Then she bent,

sighted through the tiny holes in the plates, toward the red Moon, with the black specks of the fliers against it. She touched the key and straightened to watch, with a curious, lofty serenity on her quiet, pale face.

John Star had vaguely expected some spectacular display about the machine, perhaps some dazzling ray. But there was nothing. Not even a spark when the key was closed. So far as he had seen, nothing had happened about the little instrument.

FOR A strange moment John Star fancied he was still insane. It was sheer impossibility that this odd little mechanism—a thing so small and so simple a child might have made it—could defeat the fearful invading science.

"Won't it——" he whispered anxiously.

"Wait!" said Aladoree.

Her voice was perfectly calm, without trace of weakness or weariness. Like her face, it carried something strange to him. A serenity, a disinterested passionless authority. It was absolutely confident. Without fear, without hate, without elation. It was like—like the voice of a goddess!

Involuntarily, he stepped a little back from her in awe.

They waited, watching the little black flecks swarming over the face of the sullen Moon. Five seconds, perhaps, they waited.

And the black fleet vanished.

There was no explosion, neither flame nor smoke, no visible wreckage. The fleet, simply vanished. They all stirred a little, drew breaths of awed relief. Aladoree moved to touch the screws again, the key.

"Wait!" she said once more, voice still terribly—divinely—serene. "In twenty seconds—the Moon——"

They gazed on the baleful globe. Earth's attendant for æons, now the

dwelling of unearthly hordes, waiting for the conquest of the planets. Half conscious, under his breath, John Star counted the seconds, watching the red Moon of doom.

"—eighteen—nineteen—twenty!"

Nothing had happened. A breathless, heartbreaking instant of doubt. Then the red-lighted sky went abruptly black.

The Moon was gone. Like the fleet, it had vanished, without sound or flash or visible remains. It simply had ceased to exist.

"The Medusae," Jay Kalam whispered, as if to assure himself of the unbelievable, "the Medusae are gone." A long moment of silence, and he whispered once more: "Gone! They will never dare—again!"

"I saw—nothing!" cried John Star breathlessly. "How——"

"They were annihilated," said Aladoree, strangely serene. "Even the matter that composed them no longer exists in our universe. They were flung out of all we know as space and time."

"But how——"

"That is my secret. I can never tell—save to the chosen person who is to keep it after me."

"Mortal me!" wheezed Giles Habibula. "Ah, the blessed system is safe at last. Ah, me, a mortal desperate undertaking it's been to save it. You must be precious careful not to fall into hostile hands again, lass. Old Giles will never be able to go through all this, again, life knows!"

"Ah, me! And here we're left in the middle of the desert, in the dark and——"

His voice had snapped the tension that held them.

"John——" breathed Aladoree.

No longer was it the voice of a goddess. Its awful serenity was gone. It was all human, now, weak and shaken, appealing. John Ulnar found her in the darkness, made her sit down,

and she sobbed against his shoulder, with happy sobs of relief.

"Ah, lass," groaned Giles Habibula, "good cause you have to weep! We all may perish yet, for want of a mortal bite of food!"

NEARLY A year later the *Green Defender*, newest cruiser of the legion of space, flashed down to the Purple Hall, on Phobos. Though one red-gas shell had fallen on that tiny moon of Mars, during the Medusae's bombardment, the great building had not been injured. The neutralizing solution had cured those affected by it; it had dissipated, been combined into harmless salts, until the dark sky of the little world was free from any stain of red.

The cruiser dropped on the landing stage that crowned the central purple tower. The new commander of the legion came gravely down the accommodation ladder, and John Ulnar went eagerly to meet him. Greetings over, they paused, looking down at the luxuriantly green convexity of the little planet, with grim memories of the last time they had been together here, when they took the *Purple Dream*.

"Not much trace left of the invasion," remarked Jay Kalam.

"No, commander," replied John Ulnar, with a little smile at the title. "Not one case of the madness left uncured, in all the system, I understand. And the red gone from the skies. It's already history."

"A splendid estate, John." With admiration, Jay Kalam's glance roved the richly green, curving landscape. "The finest, I think, in the system."

John Ulnar's face clouded.

"A responsibility I had to assume." His voice was almost bitter. "But I wish I were back in the legion, Jay. With Hal and Giles. I wish I were back in the guard of Aladoree."

Jay Kalam smiled. "You're—fond of her, John?"

He nodded, simply. "I was—am. I hoped—until that night, when she used AKKA! I realized then what a fool I was. She's a goddess, Jay! With the secret. She has a power—a responsibility. I saw that night that she had no time for—for love."

Jay Kalam was still gravely smiling. "Did it ever occur to you, John, that she's just a girl? Even if it is interesting to destroy a planet, she can't be doing it all the time. She's apt to get lonesome."

"Of course," John Ulnar admitted wearily, "she must have other interests. But she was—simply a goddess! I couldn't ask her. Anyhow, it could never be me!"

"Why do you think that, John?"

"For one thing, my name! Ulnar. She hates it!"

"That needn't worry you, John. The Green Hall, recognizing your distinguished service, has officially changed your name to John Star."

"Eh?" he gaped.

Then Aladoree came through the air lock, Hal Samdu and Giles Habibula behind her. Her face sedate, gray eyes cool and grave, the clear sunlight working miracles of red and brown and gold in her hair, she looked at John Star in demure inquiry.

"Since the Purple Hall is the strong-

est fortress in the system," Jay Kalam explained hastily, "the Green Hall requests you to assume the responsibility of guarding Aladoree Anthar."

"If you are willing, John Ulnar," added the girl, eyes twinkling.

His throat was dry. He searched in a golden mist for words, whispered them with an effort.

"I'm willing! But my name, it seems, is John Star."

Still grave, but for her eyes, she said: "I shall call you John Ulnar."

"But, you said——"

"I've changed my mind. I trust one Ulnar. More than that, I——"

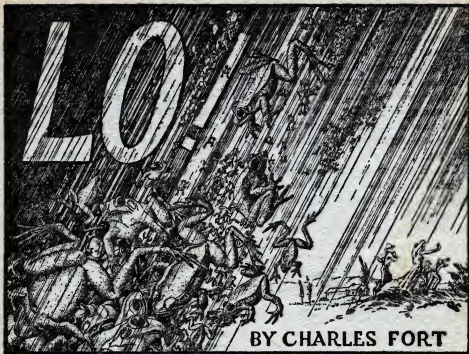
She was suddenly too busy to finish the sentence.

"Ah, me!" observed Giles Habibula, approvingly watching the two. "It is evident we're welcome, with the lass. Mortal evident! Especially the lass! Ah, and it looks like a good-enough place for a poor old soldier of the legion to pass his remaining years in peace. If kitchen and cellar bear proper proportion to the rest of the mortal building!

"Ah, Hal, if you can forget your precocious pride in all those medals and decorations that Jay has showered on you since the Green Hall made him commander of the legion, let's look about for a mortal bite to eat."

THE END.





BY CHARLES FORT

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PART SIX

Book Two

I.

ACCORDING to appearances, this earth is a central body, within a revolving, starry globe. But am I going to judge by appearances? Everything of the opposing doctrine is judgment by other appearances. Everybody who argues against judging by appearances bases his argument upon other appearances. Monistically, it can be shown that everybody who argues against anything bases his argument upon some degree or aspect of what-

ever he opposes. Everybody who is attacking something is sailing on a wind-mill, while denouncing merry-go-rounds.

"You can't judge by appearances," say the astronomers. "Sun and stars seem to go around this earth, but they are like a field that seems to go past a train, whereas it is the train that is passing the field." Judging by this appearance, they say that we cannot judge by appearances.

Our judgments must depend upon evidence, the scientists tell us.

Let somebody smell, hear, taste, see, and feel something that is unknown to me, and then tell me about it. Like everybody else, I listen politely, if he's not too long about it, and then instinctively consult my preconceptions, before deciding whether all this is evidence. An opinion is a matter of evidence, but evidence is a matter of opinion.

We can depend upon intuition, says Bergson.

I could give some woebegone accounts of what has befallen me by depending upon intuitions, whether they are called "hunches," or "transcendental consciousness;" but similar experiences have befallen everybody else. There would have been what I call good sport if Bergson had appeared upon the floor of the stock exchange and preached his doctrine in October, 1929.

We have only faith to guide us, say the theologians.

Which faith?

It is my acceptance that what we call evidence and whatever we think we mean by intuition and faith are the phenomena of eras, and that the best of minds, or minds best in rapport with the dominant motif of an era, have intuition and faith and belief that depend upon what is called evidence, relatively to pagan gods, then to the god of the Christians, and then to godlessness—and then to whatever is coming next.

We shall have data for thinking that our existence, as a whole, is an organism. First we shall argue that it is a thinkable-sized formation, whether organic or not. If now, affairs upon this earth be fluttering upon the edge of a new era, and I give expression to coming thoughts of that era, thousands of other minds are changing, and all of us will take on new thoughts concordantly, and see, as important evidence, piffle of the past.

Even in orthodox speculations there are more or less satisfactory grounds for thinking that ours is an existence,

perhaps one of countless other existences, that is an egglike formation, shelled away from the rest of the cosmos. Many astronomers have noted that the Milky Way is a broad band in the sky, with the look of a streak around a globular object. For conventional reasons for thinking that the "solar system" is central in "a mighty cluster of stars," see Dolmage, "Astronomy," p. 327. Dolmage even speculates upon a limiting demarcation which is akin to the notion of a shell, shutting off this existence from everything else.

BACK in the pessimistic times of Sir Isaac Newton was formulated the explanation of existence in general that is our opposition. It was the melancholy doctrine of universal fall. It was in agreement with the theology of the time—fallen angels, the fall of mankind; so falling planets, falling moons, everything falling. The germ of this despair was the supposed fall of the moon, not to, but around, this earth. But if the moon is falling away from observers upon one part of this earth's surface, it is rising in the sky, relatively, to other observers.

If something is quite as truly rising as it is falling, only minds that belong away back in times when everything was supposed to be falling can be satisfied with this yarn of the rising moon that is falling. Sir Isaac Newton looked at the falling moon, and explained all things in terms of attraction. It would be just as logical to look at the rising moon, and explain all things in terms of repulsion. It would be more widely logical to cancel falls with rises and explain that there is nothing.

I think of this earth as central, and as almost stationary, and with the stars in a shell, revolving around. By so thinking, I have the concept of an object, and the visualization of an existence as a whole. But the trouble with this idea is that it is reasonable. Not

absolutely can it be said that human minds reason according to reasonableness. There is the love of the paradox to consider. We are in agreement with observations, but peasants, or clodhoppers, think as we think. We offer no paradox to make one feel superior to somebody who hops from clod to clod.

What is the test? Of course, if there are no standards, all tests must be fakes. But if we have an appearance of reasonableness, and if the other side says that it is reasonable, how choose?

We read over and over that prediction is the test of science.

The astronomers can predict the movements of some of the parts of what they call the solar system.

But so far are they from a comprehensive grasp upon the system as a whole, that if for a basis of their calculations it be taken that this earth is stationary, and that the sun and the planets, and the stars in a shell, move around this earth, the same motions of heavenly bodies can be foretold. Take for a base that the earth moves around the sun, or take that the sun moves around the earth—upon either base the astronomers can predict an eclipse, and enjoy renown and prestige, as if they knew what they were telling about. Either way there are inaccuracies.

Our opposition is ancient and at least upish.

Professor Todd, in his book, "Stars and Telescopes," says: "Astronomy may be styled a very aristocrat among the sciences."

For similar descriptions, by implication, of themselves, by themselves, see all other books by astronomers.

IF I CAN show that, relatively to a viewpoint other than the astronomers' own way of adoring themselves, the supposed science of astronomy is only a composition of yarns, evasions, myths, errors, disagreements, boasts, superstitions, guesses, and bamboozlements, I

am spreading the good cheer that it is still very faulty and intellectual and still alive, and may be able to adjust and keep on exciting its exponents with admiration for themselves.

We shall see what mathematical astronomy is said to start with. If we can't accept that it ever fairly started, we'll not delay much with any notion that it could get anywhere.

The early mathematical astronomers, in their calculations upon moving bodies, could not treat of weights, because these inconstancies are relative; nor of sizes, because sizes are relative and variable. But they were able to say that they had solved their problem of how to begin, because nobody else interfered and asked whether they had or not. They gave up weight and size and said that their treatment was of *mass*.

If there were ultimate particles of matter, one could think of *mass* as meaning a certain number of those things. When atoms were believed in, as finals, an astronomer could pretend that he knew what he meant by a quantity of matter, or *mass*. Then, with electrons, he could more or less seriously keep on pretending. But now the sub-electron is talked of. And, in turn, what is that composed of? Perhaps the pretensions can stretch, but there is too much strain to the seriousness. If nobody knows what constitutes a quantity of matter, the astronomer has no idea of what he means by *mass*. His is a science of *masses*.

But it may be said that, even though he has not the remotest idea of what he is calculating about, the astronomers' calculations work out, just the same.

There was the *mass* of Mars, once upon a time, for instance; or the "known" unknowables constituting the planet. Once upon a time, the *mass* of Mars was said to be known. Why shouldn't it be said to be known? The equations were said to work out, as they should work out.

In the year 1877, two satellites of the planet Mars were discovered. But their distances and their periods were not what they should be, theoretically. So then everything that had worked out so satisfactorily, as it should work out, turned out to have worked out as it should not have worked out. A new *mass* had to be assigned to the planet Mars.

Now that works out as it should work out.

But I think that it is cannier not to have things so marvelously work out, as they should work out, and to have an eye for something that may come along and show that they had worked out as they should not have worked out. For data upon these work-outs, see Todd, "Astronomy," p. 78.

It would seem that the mistake by the astronomers is in thinking that, in a relative existence, there could be more than relative *mass*, if the idea of *mass* could be considered as meaning anything. But it is more of a dodge than a mistake. It is just relativity that the astronomers have tried to dodge, with a pseudo-concept of a constant, or a final. Instead of science, this is metaphysics. It is the childish attempt to find the absolutely dependable in a flux, or an intellectually not very far-advanced attempt to find the absolute in the relative. The concept of *mass* is a borrowing from the theologians, who are in no position to lend anything.

The theologians could not confidently treat of human characters, personalities, dispositions, temperaments, or intellects, all of which are shifts; so they said that they conceived of finals, or unchangeables, which they called "souls." If economists and psychologists and sociologists should disregard all that is of hopes and fears and wants and other changes of human nature, and take "souls" for their units, they would have sciences as aristocratic and sterile as the science of astronomy, which is con-

cerned with *souls*, under the name of *masses*.

A final, or unchangeable, must be thought of as a state of unrelatedness. Anything that is reacting with something else must be thought of as being in a state of change. So when an astronomer formulates, or says he formulates, the effects of one *mass*, or one planet, as a *mass*, upon another, his meaningless statement might as well be that the subject of his equations is the relations of unrelatednesses.

Starting with nothing thinkable to think about, if constants, or finals, are unknown in human experience, and are unrepresentable in human thought, the first and the simplest of the astronomers' triumphs, as they tell it, is the problem of the two masses.

This simplest of the problems of celestial mechanics is merely a fiction. When Biela's comet split, the two *masses* did not revolve around a common center of gravity. Other comets have broken into parts that did not so revolve. They have been no more subject to other attractions than have been this earth and its moon.

The theorem is Sunday-school science. It is a mathematician's story of what bodies in space ought to do. In the textbooks it is said that the star Sirius and a companion star exemplify the theorem, but this is another yarn. If this star has moved, it has not moved as it was calculated to move. It exemplifies nothing but the inaccuracies of the textbooks. It is by means of their inaccuracies that they have worked up a reputation for exactness.

OFTEN in his book, an astronomer will sketchily take up a subject and then drop it, saying that it is too complex, but that it can be mathematically demonstrated. The reader, who is a good deal of a dodger, himself, relieved at not having to go into complexities, takes this

lazily and faithfully. It is bamboozlement.

There are many of us, nowadays, who have impressions of what mathematicians can do to, or with, statistics. To say that something can be mathematically demonstrated has no more meaning than to say of something else that it can be politically demonstrated. During any campaign, read newspapers on both sides and see that anything can be politically demonstrated. Just so it can be mathematically shown that twice two are four, and it can be mathematically shown that two can never become four. Let somebody have two of arithmetic's favorite fruit, or two apples, and undertake to add two more to them. Although he will have no trouble in doing this, it can be mathematically shown to be impossible. Or that, according to Zeno's paradoxes, nothing can be carried over intervening space and added to something else. Instead of ending up skeptically about mathematics, here am I upholding that it can prove anything.

We are told in the textbooks, or the tracts, as I regard these propagandist writings of Sunday-school science, that by parallax, or annual displacement of stars, relatively to other stars, the motion of this earth around the sun has been instrumentally determined. Mostly, these displacements are about the apparent size of a fifty-cent piece, held up by some one in New York City, as seen by somebody in Saratoga. This is much refinement. We ask these ethereal ones—where is their excuse if they get an eclipse wrong by a millionth of an inch, or a millionth of a second?

We look up this boast.

We find that the disagreements are so great that some astronomers have reported what is called *negative parallax*, or supposed displacement of stars, the wrong way, according to theory. See Newcomb, "The Stars," p. 152. See the "English Mechanic," 114-100,

112. We are out to show that astronomers themselves do not believe parallactic determinations, but believe those that they want to believe. Newcomb says that he does not believe these determinations that are against what he wants to believe.

Spectroscopic determinations are determined by whatever the spectroscopists want to determine. If one thinks not, let one look up the "determinations" by astronomers who were for and against Einstein. Grebe and Bachem, at Bonn, found shifts of spectral lines in Einstein's favor. They were for Einstein. St. John, at the Mount Wilson Observatory, found the testimony of the spectroscope not in Einstein's favor. He was against Einstein. The spectroscope is said to be against us. But if we had a spectroscope of our own, it would be for us.

In "The Earth and the Stars," Abbot says that the spectroscope "seems to indicate" that variable stars, known as the Cepheid Variables, are double stars. But he says: "The distance between the supposed pairs turns out to be impossibly small." When a spectroscopic determination is not what it should be, it only "seems to indicate."

The camera is another of the images in astronomical idolatry. I note that bamboozlements that have played out everywhere else still hold good in astronomy. Spirit photographs fall flat. At the movies, if we see somebody capering seemingly near an edge of a roof, we do not think that he had been photographed anywhere near an edge of a roof. Nevertheless, even in such a religious matter as photography in astronomy, a camera tells what it should tell, or the astronomers will not believe it.

If the astronomers would fight more among themselves, more would come out. How can I be a pacifist, just so long as I am trying to educate myself? Much comes out in war times. Considerable came out in astronomical mat-

ters during the Mars controversy. Everything that was determined by Lowell, with his spectroscope, and his camera, and his telescope, as an indication of the existence of life upon the planet Mars, was determined by Campbell, with his spectroscope, and his camera, and his telescope, to be not so. The question is not what an instrument determines. The question is—whose instrument? All the astronomers in the world may be against our notions, but most of their superiority is in their more expensive ways of deceiving themselves.

Foucault's experiment, or the supposed demonstration with the pendulum, is supposed to show that this earth rotates daily. If a pendulum does—at least for a while—swing somewhat nearly in a constant line, though changing relatively to environment, and if we think that neither religiously, nor accidentally, has it received some helpful little pushes, we accept that here there may be indication of an annual, and not daily, rotation of this earth. That would account for the annual shift, and not the daily shift, of the stars. I don't know that I accept this, but I have no opposing prejudice.

When I write of this earth as "almost stationary," as I have to regard it, if I think of it as surrounded by a starry shell that is not vastly far away, I mean that relatively to the tremendous velocities of conventionality. But this alleged experiment has never been more than part of an experiment. I quote from one of the latest textbooks, "Astronomy," by Professor John C. Duncan, published in 1926. We are told that a pendulum, if undisturbed, swings for "several hours," in "very nearly" the same plane. Further along we read that, in the latitude of Paris, where Foucault made his experiment, the time for a complete demonstration is thirty-two hours. Professor Duncan makes no comment, but it is the reader's own

fault if he reads in these statements that the swing of a pendulum, through more than part of an experiment, and in more than "very nearly" the same plane, ever has demonstrated the daily rotation of this earth.

In the textbooks, which are pretty good reading for contrary persons like ourselves, it is said that the circumstance that this earth is approximately an oblate spheroid indicates the rapid rotation of this earth. But our negative principle is that nothing exclusively indicates anything. It does not matter what an astronomer, or anybody else, says to support any statement, the support must be a myth. Even if I could accept that the astronomers are right, I could not accept that they can demonstrate that they're right. So we hunt around for opposing data, knowing that they must be findable somewhere.

We come upon the shape of the sun. The sun rotates rapidly, but the sun is not an oblate spheroid; if there is any departure from sphericity, the sun is a prolate spheroid. Or we argue that oblateness may be an indication that in early, formative times this earth rotated rapidly, but that now this earth could be oblate and almost stationary. It may be another instance of my many credulities, but here I am accepting that this roundish, or perhaps pear-shaped, earth is flattened at the poles, as it is said to be.

Astronomers cite relative numerosness of meteors as indication of this earth's motion in an orbit. Professor Duncan ("Astronomy," p. 262) says that meteors seen after midnight are about twice as numerous as are those that are seen before midnight. "This is because, in the latter half of the night we are riding on the front side of the earth, as it moves along its orbit, and receives meteors from all directions, whereas in the earlier half we see none of those which the earth meets 'head-on.'"

THERE is no use comparing little sparks of meteors, seen at different times of night, because of course soon after midnight more of these little things are likely to be seen than earlier in the evening, in lingering twilight. Here, Professor Duncan's statement is that when meteors can be seen morely, more meteors can be seen. That is wisdom that we shall not defile.

In the records of great meteors that were seen in England in the year 1926—see "Nature, Observatory, English Mechanic"—eighteen were seen before midnight, and not one was seen after midnight. All other records that I know of are against this alleged indication that this earth moves in an orbit. For instance, see the catalogue of meteors and meteorites published in the "Rept. Brit. Assoc. Ad. Sci.," 1860. See page 18, 51 after midnight (from midnight to noon); 146 before midnight (noon to midnight).

I have records of my own for one hundred and twenty-five years in which the preponderance of early meteors is so great that, if there were any sense to this alleged indication, it would mean that this earth is running backward, or going around the way it shouldn't. Of course I note that great meteors are more likely to be reported before midnight, because, though many persons are out after midnight, mostly they're not out reporting meteors. But Professor Duncan has made a statement, which depends upon records, and I am checking it up, according to records. Year 1925, for instance—meteors of France and England—14 before midnight; 3 after midnight. This record, as I have it is not complete, but I will hold out for the proportionality. Most of the great meteors of 1930 were seen before midnight.

Whatever becomes of Professor Duncan's statement, I'll make one, myself, and that is that if nobody looks up, or checks up, what the astronomers tell us,

they are free to tell us anything that they want to tell us. Their system is a slippery imposition of evasions that can not be checked up, or that, for various reasons, mostly are not checked up. But at least once there was a big check-up.

The 24th of January, 1925—excitement in New York City.

It was such as, in all foreign countries, is supposed to arise in America only when somebody finds out a new way of making dollars.

It was the morning of the eclipse of the sun, total over a part of New York City.

Open spaces in Central Park were crowded down to a line, as exactly as possible at 83rd Street. Up in the air were planes full of observers. Coogan's Bluff was lively with scientific gab. Hospitals were arranging that patients should see the eclipse. There was scarcely a dollar in it, and this account will be believed in England and France no more than will most of our other accounts.

At the Fifth Avenue police court, Magistrate Dale adjourned court and went with lawyers and cops and persons out on bail to the roof. In Brooklyn, the chamber of commerce dropped all matters of exports and imports and went to the roof. I don't suppose everybody was looking. I can't accept homogeneity. There were probably some contrary ones who went down into cellars, simply because most of their neighbors were up on roofs. But the New York Telephone Co. reported that when the eclipse came not one call came into one of its offices for ten minutes.

When there are uproars in New York, they are such uproars as have never been heard anywhere else; but I think that most striking in the records of silences is this hush that came for ten minutes upon New York City.

Along the line of 83rd Street, which had been exactly predicted by the astronomers as the southern limit of the

path of totality, and in places north and south, were stationed one hundred and forty-nine observers, sent by the New York lighting companies to report upon light effects. With them were photographers.

At Petropaulovsk, Kamchatka, and at Cachapoyas, Peru, an eclipse is all that it should be, and books by astronomers tell of the minute exactness of the astronomers. But this was in New York City. Coogan's Bluff got into this. There were cops and judges and gunmen on roofs, and the telephones were silent. There were one hundred and forty-nine expert observers, who were not astronomers. They had photographers with them.

In time, the astronomers did pretty well. But, hereafter when they tell of their refinements, as with disks several hundred miles away, I shall think, not of fifty-cent pieces, but of Ferris Wheels. Their prediction was wrong by four seconds.

The one hundred and forty-nine observers for the lighting companies reported that the astronomers were wrong, in space, by three quarters of a mile.

It was the day of the big check-up.

IF THE SUN and the planets compose a system that is enormously remote from everything else in existence, what is it that regularizes the motions, and why does not the mechanism run down? The astronomers say that the planets keep moving, and that a whole system does not run down, because space is empty, and there is "absolutely" nothing to tend to stop the moving bodies. See Abbot, "The Earth and the Stars," p. 71.

Astronomers say this early in their books. Later, they forget. Later, when something else requires explanation, they tell a different story. They explain the zodiacal light in terms of enormous quantities of matter in space.

In their chapters upon meteors, they tell of millions of tons of meteoric dusts that fall from space to this earth every year. Abbot says that space is "absolutely" empty. Ball, for instance, explains the shortening of the orbit of Encke's comet as a result of friction with enormous quantities of matter in space. I don't know how satisfactory, except to ourselves, our own expression will be, but compare it with a story of an absolute vacancy that is enormously occupied.

There is a tendency to regularize. Crystals, flowers, and butterflies' wings. Proportionately as they become civilized, people regularize, or move in orbits. People regularize in eating and sleeping. There are clockwork Romeos and Juliets. Everywhere, where the tendency is not toward irregularization, the tendency is toward regularization. Here's a good specimen of my own wisdom. Something is so, except when it isn't so.

Not in terms of gravitation, but in terms of this tendency to regularize, celestial periodicities may be explained.

Why does not the mechanism of what the astronomers think is a solar system run down?

The astronomers say that this is because it is unresisted by a resisting medium.

Why does not a heart run down? Anyway, for a long time?

It is only a part, and, as a part, is sustained by what may be considered a whole. If we think of the so-called solar system, not as a virtually isolated, independent thing, with stars trillions of miles away, but as part of what may be considered an organic whole, within a starry shell, our expression is that it is kept going organically, as the heart of a lesser organism is kept going.

Why does not the astronomers' own system, or systematized doctrine, run down, or why so slow about it? It is only a part of wider organization, from

which it is receiving maintenance in the form of bequests, donations, and funds of various kinds.

Our opposition is a system of antiquated thought, concerned primarily with the unthinkable. It is supported by instruments that are believed when they tell what they should tell. The germ of the system is the fall of the rising moon. Its simplest problem is a fairy-theorem, fit for top-heavy infants, but too fanciful for grown-up realists. Its prestige is built upon its predictions. We have noted one of them that was three quarters of a mile wrong.

Newtonism is no longer satisfactory. There is too much that it cannot explain.

Einsteinism has arisen.

If Einsteinism is not satisfactory, there is room for other notions.

For records of eclipses during which the stars were not displaced, as, according to Einstein, they should be, see indexes of "Nature." See vols. 104 and 105. Displacement of spectral lines—see records of astronomers who have disagreed. Perihelion-motion of Mercury's orbit—Einstein calculated without knowing what he was calculating about. Nobody knows what this eccentricity is. See records of the transits of Mercury. Neither Newtonians nor Einsteinites have predicted them right. See the *London Times*, April 17 and 24, 1923.

Here Sir J. Larmor shows that, if Einstein's predictions of light-effects during eclipses were verified, they disproved his theory—that, though Professor Einstein would be a great mathematician, if in our existence anything could really be anything, relativity is so against him that he is only a relatively great mathematician, and made a bad error in his calculations, having mistakenly doubled certain effects.

Defeat has been unconsciously the quest of all religions, all philosophies, and all sciences. If they were con-

sciously trying to lose, they would be successes. Their search has been for the absolute, in terms of which to explain the phenomenal, or for the absolute to relate to. Supposed to have been found, it has been named Jehovah, or gravitation, or the persistence of force. Professor Einstein has taken the velocity of light, as the absolute to relate to.

WE CANNOT divorce the idea of reciprocity from the idea of relations, and relating something to the absolute would be relating the absolute to something. This is defeating an alleged concept of the absolute, with the pseudo-idea of the relative absolute. The doctrine of Professor Einstein's is based not upon an absolute finding but upon a question:

Which is the more graspable interpretation of the Michelson-Morley experiments:

That no motion of this earth in an orbit is indicated, because the velocity of light is absolute:

Or that no motion of this earth in an orbit is indicated, because this earth is stationary?

Unfortunately for my own expressions, I have to ask a third question:

Who, except some one who was out to boost a theory, ever has demonstrated that light has any velocity?

Professor Einstein is a Girondist of the scientific revolution. His revolt is against classical mechanics, but his methods and his delusions are as antiquated as what he attacks. But it is my expression that he has functioned. Though his strokes were wabbles, he has shown with his palsies the insecurities of that in science which has been worshipfully regarded as the most high.

It is my expression that the dissolution of phenomenal things is as much a matter of internal disorders as the effect of any external force, and that the slump of so many astronomers in favor of Einstein, who has made good

in nothing, indicates a state of dissatisfaction that may precede a revolution—or that, if a revolt starts in the observatories, hosts of irreconcilable observations will be published by the astronomers themselves, cutting down distances of planets and stars enormously. I shall note an observation by an astronomer, such as probably no astronomer, in the past, would have published. It seems to have been recorded reluctantly, and a conventional explanation was attempted—but it was published.

I take from a clipping, from the *Los Angeles Evening Herald*, April 28, 1930, which was sent to me by Mr. L. E. Stein, of Los Angeles. In an account of the eclipse of the sun, April 28, 1930, Dr. H. M. Jeffers, staff astronomer of Lick Observatory, says: "We expected the shadow to be but half a mile in width. Instead of that, I think that it was nearer five miles broad." He says: "It may be suggested by others that the broad shadow was cast by astronomical errors due to the moon being closer to the earth than we have placed it in theory. But I don't believe that this broad belt was caused by anything but refraction."

The difference between half a mile and five miles is great. If the prophets of Lick Observatory did not take refraction into consideration, all the rest of their supposed knowledge may be attributable to incompetence. This difference may mean that the moon is not more than a day's journey away from this earth.

In "The Earth and the Stars," p. 211, Abbot tells of the spectroscopic determinations, by which the new star in Perseus (February 22, 1901) was "found" to be at a distance of three hundred light-years from this earth. The news was published in the newspapers. A new star had appeared about the year 1600, and its light was not seen upon this earth, until February 22,

1901. And the astronomers were able to tell this—that away back, at a moment when Queen Elizabeth—well, whatever she was doing—but the astronomers told that just when Queen Elizabeth was doing whatever she was doing, the heavens were doing a new star. And where am I, comparatively? Where are my poor little yarns of flows of methylated spirits from ceilings, and "mysterious strangers," and bodies on railroad lines, compared with a yarn of the new star and Queen Elizabeth?

But the good little star restores my conceit. In the face of all spectroscopes in all observatories, it shot out nebulous rings that moved at a rate of two or three seconds of arc a day. If they were three hundred light-years away, this was a velocity far greater than that of light is said to be. If they were three hundred light-years away, it was motion at the rate of 220,000 miles a second. There were dogmas that could not stand this, and the spectroscopic determinations, which were in agreement, were another case of agreements working out, as they should not have worked out.

The astronomers had to cut down one of their beloved immensities. Whether as a matter of gallantry, or not, they spread a denial for Queen Elizabeth's reputation to tread upon, saving that from the mud of an inquiry into just what her majesty was doing, and substituting unromantic speculations upon what, say, Andrew Jackson was up to.

Abbot's way of explaining the mistake is by attributing the first "pronouncements" to "the roughness of the observations."

All over this earth, astronomers were agreeing in these "determinations." They were refinements until something else appeared and roughened them.

It would seem that, after this fiasco of the readjusted interest in what historical personages were doing, astronomers should have learned something. But,

if Professor Todd is right in his characterization of them, that is impossible. About twenty years later, this situation, essentially the same in all particulars, was repeated. Upon May 27, 1925, a new star was discovered in the southern constellation Pictor. By spectroscopic determination, its distance was "determined" to be five hundred and forty light-years. See this stated in a bulletin of the Harvard observatory, November, 1927.

March 27, 1928—the new star split.

WHEN the split was seen, astronomers of the South African observatory repudiated the gospel of their spectroscopes of three years before. There must have been much roughness, even though there had been three years in which to plane down the splinters. They cut the distance from five hundred and forty to forty light-years. If there should be any more reductions like this, there may start a slump of immensities down toward a conception of a thinkable-sized formation of stars. A distance cut down $60 \times 60 \times 24 \times 365 \times 500 \times 186,000$ miles is a pretty good start.

Professor Einstein, having no means of doing anything of the kind, predicts a displacement of the stars.

Astronomers go out upon an expedition to observe an eclipse, and, not knowing that Einstein has no special means of predicting anything, they report, presumably because they want so to report, that he is right.

Then eclipse after eclipse—and Einstein is wrong.

But he has cast an ancient system into internal dissensions, and has cast doubts upon antiquities of thought almost as if his pedantic guesses had had better luck.

Whether the time has come, or not, here is something that looks as if it is coming:

An editorial in the *New York Sun*,

September 3, 1930, views of somebody else quoted:

"The public is being played upon and utterly misled by the dreamery of the rival mathematical astronomers and physicists—not to mention the clerics—who are raising the game of notoriety to a fine art; in rivalry to religious mysticism, a scientific pornography is being developed, and attracts the more because it is mysterious."

These are the views of Professor Henry E. Armstrong, emeritus head of the department of chemistry, at City and Guilds College, South Kensington, London.

This is revolt inside. That is what develops into revolution.

Professor Armstrong's accusation of pornography may seem unduly stimulating; but, judging by their lecheries in other respects, one sees that all the astronomers have to do is to discover that stars have sex, and they'll have us sneaking to bookstores for salacious "pronouncements" and "determinations" upon the latest celestial scandals. This would popularize them. And after anything becomes popular—then what?

That the time has come—or is coming—for more of the revolt within—

Or that, if they cannot continue upon their present pretenses of progress, the astronomers must return from their motionless excursions. A generation ago, they told of inconceivable distances of stars. Then they said that they had, a thousand times, multiplied some of these distances: but if the inconceivable is multiplied any number of times, it is still the same old inconceivability. If, at the unthinkable, thought stops, but if thought must move somewhere, the astronomers, who cannot go on expansively, will, if they do think, have to think in reductions. If the time has come, there will be a crash in the observatories, with astronomers in a panic selling short on inconceivabilities.

Upon September 2, 1930, began a

meeting of the American Astronomical Society, in Chicago. A paper that was read by Dr. P. Van de Kamp may be a signal for a panic. Said he: "Some of the stars may actually be thousands of light-years nearer than astronomy believes them to be."

That—with some extension—is about what I am saying.

Says the astronomer Leverrier—back in times when an astronomical system is growing up, and is of use in combating an older and decaying orthodoxy, and needs support and prestige—says he—"Look in the sky and at the point of my calculations you will find the planet that is perturbing Uranus."

"Lo!" as some of the astronomers say in their books. At a point in the sky that can be said—to anybody who does not inquire into the statements—to be almost exactly the point of Leverrier's calculations is found the planet Uranus, to which—for all the public knows—can be attributed the perturbations of Uranus.

Up goes the useful renown of the astronomers. Supported by this triumph, they function.

But if they're only the figments of one of the dreamlike developments of our pseudo-existence, they, too, must pass away, and they must go by way of slaughter, or by way of laughter. Considering all their doings, I think that through hilarity would be the fitter exit.

Later:

"Look at the sky," we are told that the astronomer Lowell said, "and at the point of my calculations, you will find the planet that is perturbing Neptune." But this is in the year 1930.

Nevertheless we are told that a planet is found almost exactly at the point of the calculations. The exultations of the astronomers are spread-headed.

But this is later. The damned thing takes a tack that shows that it could

no more have been perturbing Neptune than I, anyway just at present, could cast a meeting of the National Academy of Sciences into disorder by walking past it.

They must be murdered, or we shall laugh them away. There is always something that can be said in favor of murder, but in the case of the astronomers that would be willful waste of the stuff for laughter. Orthodox astronomers have said that Leverrier used no mathematical method by which he could have determined the position of Neptune. See Lowell's "The Evolution of Worlds," p. 124. By way of stuff for the laugh, I mention that one of these disbelieving astronomers was Lowell.

ONE TIME, in a mood of depression, I went to the New York Public Library, and feeling a want for a little light reading, I put in a slip for Lowell's "Memoir on a Trans-Neptunian Planet." I got even more amusement than I had expected.

Just where was this point, determined by Lowell, almost exactly in which his planet was found? The spread-heads—the special articles—over and over in the newspapers of the world—"almost exactly."

Says Lowell, page 105: "Precise determination of its place does not seem possible. A general direction alone is predicable."

The stuff for a laugh that is as satisfactory as murder is in the solemn announcements by the astronomers, about April Fool's Day, 1930, that they had found Lowell's planet almost exactly in the place, precise determination of which does not seem possible—

Their chatter over Lowell's magnificent accuracy in pointing in a general direction—

Then the tack of a thing that showed it could not have been all this indefiniteness, anyway—

265 years, instead of 3,000 years—

And instead of going, the thing was coming.

If they can't tell whether something is coming or going, their solemn announcements upon nearness or farness may be equally laughable.

WE THINK of intermundane isolations that have been maintained, as once the Americas were kept separated from Europe, not by vast and untraversable distances, but by belief in vast and untraversable distances. I have no sense of loneliness in thinking that the inorganic sciences that are, by inertia, holding out for the isolation of this earth have lost much power over minds. There are dissatisfactions and contempts everywhere.

There may be civilizations in the lands of the stars, or it may be that, in the concavity of a starry shell, vast, habitable regions have been held in reserve for colonization from this earth. Though there is considerable opposition to wars, they are, as at any moving-picture places one can see, still popular: but other eliminations of human beings have waned, and it is likely that for a long time birth control will have no more than its present control upon births.

The pestilences that used to remove millions are no longer so much heard of. It may be that an organic existence is, by lessening eliminations, preparing a pressure of populations upon this earth that can have relief only in enormous colonizing outlets somewhere else. It is as if concordantly, the United States has shut down, as a relief, to super-abundances of people in Europe, and as if representing the same purpose or plan, Australia and Canada, as well as the United States, are shutting out Asiatics. It is as if coöperatively with the

simultaneous variations of need, aviation is developing, as the means of migratory reliefs—

If there is a near-by land that is a revolving shell of stars—

And if, according to data that I have collected, there is not increasing coldness and attenuation of air, past a zone not far from this earth.

Nineteen hundred and thirty something or another—may be nineteen hundred and forty or fifty—

Skyward ho!

The treks to the stars. Flows of adventurers—and the movietone news—press agents and interviews—and somebody about to sail to Lyra reduces expenses by letting it be known what brand of cigarettes he'll take along—

Caravels with wings—and the covered planes of the sky—and writers of complaints to the newspapers—this dumping of milk bottles and trash from the expeditions is an outrage. New comets are watched from this earth—long trains of voyagers to the stars, when at night they turn on their lights. New constellations appear—the cities of the lands of the stars.

And then the commonplaceness of it!

Personally conducted tours to Taurus and Orion. Summer vacations on the brink of Vega. "My father tells of times, when people, before going to the moon, made their wills." "Just the same there was something peaceful about those old skies. It's getting on my nerves, looking up at all those lipstick and soap and bathing-suit signs."

The commonplaceness of it all! Of course the stars are near. Who, but a few old fossils, ever thought otherwise? Does the writer of these articles think that he found out anything new? All these notions of his were matters of common knowledge, away back in the times of ancient Greece.

Charles Fort nears his titanic and astounding conclusions. The next installment is vitally important.

Still Crowding!

Do you like the new type? I do. And it carries about twenty-five per cent more words to each page than the old. Notice Brass Tacks this month. We can't begin to get all the letters in, but we're doing our best by reducing the type size there.

If you don't like the smaller type for letters, we can change back; but it means that we can print close to fifty letters each month. Some of the long letters give us a real problem. We don't like to cut them—but it isn't fair to leave out five short letters and print one which is very long.

Some one this month accuses me of having a "staff" of hack writers. Well, I'm coming closer to having a staff on Astounding than on most magazines—because we've combed the field to get your favorite writers. And one after another they have come to Astounding.

We buy all stories on a free-lance basis. Nothing is "ordered." We want to give you the best there is, and I know we're doing it. That doesn't mean perfection. When we reach the peak, there is no place to go but down. I expect our magazine to keep climbing upward for a long, long time.

We have more surprises coming. One after another we will bring them to you, and as fast and often as we can. I hope to make another important announcement on stories next month.

Meantime, I want to thank the many readers who have responded to my request that each of you interest one new buyer for Astounding. I appreciate it. And if the response has been as universal as I hope it has, nothing will stand in the way of our continued progress.

This month we give you as big—and even bigger—a list of complete stories as the entire story-content of any other science-fiction magazine. And in addition we give you the Skylark, Legion Of Space, and Lo! We do not deprive you of one thing in order to include another. We add it. And so long as our reading audience grows larger, we shall continue to do the same.

You know, there's something about the readers of Astounding Stories that is a little different from any other magazine group. It's more intimate, closer, with a clearly defined kinship of common interest. That's why I feel free to come to you and ask you to reach out and find new members for our family circle. You know that I wouldn't ask a favor without reason. And I know you appreciate what we have done so far.

We all want to reach wider horizons in our own way. And we know that Astounding Stories is our progressive medium for doing so in science-fiction.

And somehow I feel that I'm writing this to you, personally—as I hope you feel when you write to me.

—The Editor.

Let's Get Down to BRASS TACKS



AN OPEN FORUM OF CONTROVERSIAL OPINION

A History That We Hope Comes True

Dear Editor:

I believe I can lay claim to being at least one of your oldest readers. Even now, fifty years after the event, I can remember the thrill I experienced when, in September of 1933, I picked up the new *Astounding Stories*, after it had been renewed by Street & Smith. Fifty years, but many of those famous old stories linger as memories. Pleasant memories, too.

The most revolutionary magazine in the world of the period, its first brilliant stroke was the invention of the term "thought-variant." And thought-variants came; indeed, though in a very early letter to you I stated that it would be impossible for writers to think up absolutely new ideas to write into stories worthy of being called thought-variants, they came, without one miss, each month for fifty years. Of course, it is now a widely spread belief that due to those seemingly impossible theorizings of yesterday's authors, science has been pushed forward in its stride almost a decade. The recent successful landing of a pilotless space-ship, propelled by light, on Mars, was and is known as the direct result of a story printed in the April, 1963, issue of *Astounding*, a little less than twenty years ago. And the name? Well, every one is familiar with that and its author.

Of course, it's a far cry from the old pulp-paper magazine of '34 to '62, to the handsome magazine that is read by one quarter of the families of the world now; but nevertheless, I like to think of the *Astounding* that featured those master writers, Schachner, Kelly, Williamson, Fearn, West, Smith, Wandrei, Vincent, and innumerable others. Most of them continued to write for you for two decades but for many reasons new authors succeeded them, and in many ways they are better: Edgar Baylies, Al Logan, John Becklemeyer, John Sledie, Pelpton S. Tanner, and Brenton Smith, who, by the way, was the grandson of E. E. Smith. There were others and others, but why mention them? Most of them are world-renowned.

Stories? No one can remember them all. There must now be a total of thousands. There were novels by the score, short stories and novelettes, many of a quality which sometimes brings them to the fore as subject matter for classes in literature all over the world. You will find the

short story *The Damnable Conquest*, by Sidney Smiler, in almost every collection of classic short stories. Of course, there are many stories that stand out, no matter what bridge of years stands between them and us; and out of all those, there are those that, some years after he started writing them, brought Edward Elmer Smith a much-deserved fame as a novelist. Those stories of his have become particularly popular now, just as it has helped bring about the present immense circulation of the magazine, through the landing of a space-ship on Mars. You can buy the entire set of his works at any bookstore—they are thirty in number.

Smith wrote for us a series of twelve *Skylark* stories, besides other fantasies. His career with *Astounding* began when he wrote *The Skylark Of Valeron*, a book which attracted the attention of many of the world's foremost scientists. Smith followed up this tale with what I consider his best story: *The Infinite Skylark*. Then in quick succession came *The Skylark Beyond Time*, *The Ultra-dimensional Skylark*, *Skylark Seven*, *The Skylark of Napissan*, *The Skylark of Higambra*, and several more.

Jack Williamson was another much-liked author, starting off an enviable career when he wrote *The Legion Of Space*. A host of novels flowed from his pen after that, in your magazine as well as in others. All of them came out as books. With E. E. Smith, Jack Williamson was referred to as the Jules Verne of the 20th century.

Now as to your present issue, the one which is your 50th anniversary. I still feel a kind of awe when I read it. Still the term "thought-variant" continues; and still more thought-variant stories are published. And by now I am convinced there will be no end to them. Rather, we are only at the beginning—I, who wrote you fifty years ago, saying you would never be able consistently to publish one a month over a long period of years! Your present thought-variant is grand—*The Slice Of Space*, by Andrew Frensen. The serial, *The Impossible Dimension*, by Janus S. Sarmer, is certainly worthy of the 50th anniversary issue. I enjoyed Sarmer's explanation of a man walking, at the same time, in directions opposite to each other, yet in but one place. I am glad you brought this author back after an absence of nearly three years. The serial which was continued from last month is also very good. In fact, *An Eternity Of Time*

lessness by Richard Strithers Cromwell, will go down in history as one of the greatest novels.

I suppose I had better conclude this long letter. My wife is calling me to dinner, and three hungry grandchildren are home from the sleeping schools, almost starved. Sometimes, when I feel in a less selfish mood, I allow those three children, all over ten, to roam their way, one at a time, through those old Astoundings. They must open the tin boxes containing each volume very carefully, handle them as carefully, and replace them as carefully. To me, they are so valuable that I refuse every offer that has been made me by some of the foremost magazine collectors of the times. And they have offered fabulous prices, too. I have every copy of Astounding. I wonder if there are any readers who can say as much?—Claude Haverstock, Ex-mayor Air City No. 6, Stationed Above Cincinnati, Ohio.

"Dold Best"

Dear Editor:

The July Astounding Stories cover was very good.

Before Earth Came was great. It was truly a thought-variant. J. R. Fearn propounded many new ideas and some old ones. However, the alien race on that artificial planet had me guessing.

Dr. Lu-Mie was great. All ant and termite stories are welcome. That philosophy was certainly new.

Spoor Of The Bat shows that a good interplanetary story can still be had, and I enjoyed *The Nerveless Man* immensely.

The Radio Mind-Ray was typical of Coblenz. His stories are original, refreshing, and thoroughly entertaining.

The Electric Snare was short, but a good story.

And *Lo!* continues to be everything you said it was.

As to the illustrations: Dold is undoubtedly the best man for this inside work. As for the covers, I cannot compare them, because I have only seen Brown's work. I would like to see a Dold cover.—Raymond Peel Mariella, 5873 Woodcrest Ave., Philadelphia, Pa.

Astounding Has Never Had A Staff Of Authors, Does Not "Order" Stories, And Has No Such "Fundamental Policy"

Dear Editor:

I was very well pleased with the July issue. However, when it came to reading *Before Earth Came*, I just had to shut my eyes to the impossibility of the story and enjoy it in spite of this silliness. It was well written despite the fact that it was by one of these stock authors. The new Astounding embraces that policy characteristic of all Street & Smith magazines and many others: the employing of staff authors. This policy plays havoc with the free-lance writers and lowers the quality of the magazine. It is useless to ask that it be discontinued, for it is a fundamental policy.

Spoor Of The Bat was snarby. This story had a plot. It did not merely expound some rattle-brained "thought-variant" theory and then build a series of hair-raising adventures from the results of the investigating of this theory. It had mystery to it and it accomplished something.

Dr. Lu-Mie and *The Nerveless Man* were both quite good, the latter as a study of reactions. But *The Electric Snare* was positively ridiculous, and *Guns Of Eternal Day* was not good.

Incidentally, readers, I know who is the editor of this magazine. Being curious, I found out. His name is— but if I tell this letter will

not be printed. I hope the editor does not hold it back out of modesty. For I choose to praise him. When Clayton Magazines liquidated, our editor found himself looking for a job and at present is editing Astounding. He has had years of editorial experience and his competency is shown by the fact that he held a position higher titularly than his present one. It is his experience that enables him to know so much about editing, and Street & Smith's solvency that enables him to put his ideas into practice. He has not come much into the limelight, and few of us would know him anyhow, despite the fact that he is included in Who's Who In America.—Philip Allison Turner, Hiram, Ohio.

"Thought-variant:" Out Of The Usual Thought-channels

Dear Editor:

Science-fiction for a long time dominated the field of my literary delvings, until, three years ago, I felt that either I had intellectually outgrown the puerile writings of little-informed men or that the magazines then extant had degenerated into unworthy pulps. From time to time, hoping to find the excellence of the 1928 and 1927 creations, I dipped into the sundry science-fiction magazines, including your own, each time to be frustrated in discovering stories of worth. Last month a chance reading of your June number "astounded" me in many senses of the word. I found a magazine with stories which were readable and well told. Stories which, still subordinating rational scientific thought for the spectacular, nevertheless gave science some place in their thematic make up. I was sufficiently enthused to buy the July issue. Perhaps you would be willing to lend an ear to the criticisms of one who has investigated and knows quite thoroughly the entire field—plots, formats, science in general—of science-fiction.

Frankly, I do not know the meaning of the term "thought-variant." Judging from its July representative, I doubt if it is worth knowing. J. R. Fearn runs the entire gamut of old science-fiction errors which have been mulled over a thousand times. The story, were it not for its prominent position in the magazine, would not be worthy of discussion.

Dr. Lu-Mie, though faintly reminiscent of a similar and better story long ago written by Dr. Keller, was none the less readable.

Spoor Of The Bat: Following the format of a hundred similar stories, it remains the best written in the issue on hand. "Toom" is one of the most interesting characters I have met in science-fiction. Somewhat different from the average blood-and-fire hero.

The Nerveless Man: A chemical which will cause permanent analgesia without affecting other body-functions is a bit far fetched. The author makes no attempt to explain its action on the body. It is more of this explanation that we need. It is science-fiction's only claim over the other pulps.

Lo!: Interesting, but stupid in its implications. Horrible humor.

Astounding Stories, in general, stands out in its field. It seems that it is only the field which is weak. Men like Drs. Smith and Keller, John Campbell, and a few others remain the only justification. Well, I'll give the magazine a few more trials, until the end of Smith's new *Skylark* story at least.

How about a few stories using Einstein's concepts as the scientific medium—but using them intelligently?—Cyril Endfield, 537 Monroe Ave., Scranton, Pa.

Awful

Dear Editor:

Your June issue of Astounding Stories was a prize number! All the stories were good. The best story in the issue, I believe, was *The Hum-*

peror's Heart, by Henry J. Kostkos. At least, this story impressed me the most.

Cut off the edges, to make them smooth.

Put the date of the magazine in larger letters.

And don't get anything more like *Lo!* It's awful!—J. H. Heunigar, East Tawas, Michigan.

Excellent

Dear Editor:

Your June issue was an excellent one. I have yet to read an unexciting yarn by Murray Leinster. His *Sideways In Time* is great. But—if time has infinite extensions north and south, as well as east and west, why not up and down as well? If it is actually infinite, then it follows that periods vary, not as separate roads running in the same direction, but as a broad, level plain, changing by infinitesimal gradations from one coordinate to another. That would make the theory untenable, it seems, for we simply can't picture ourselves as living and doing things in an infinite number of time coordinates at once.

The Legion Of Space is certainly gathering power. I'm afraid I shall have to revise my previously expressed opinion and say that Jack Williamson has done well indeed with this alien menace story.—Jack Winks, E. E., 7817 East Eud Ave., Chicago, Ill.

Read Four—Kept One

Dear Editor:

Before Earth Came and *Spoor Of The Bat* were both excellent. *Spoor Of The Bat* was especially interesting to me, as stories of rocket ships and flights to other planets are the kind I like. Some more of Zagat. Brown was good on the July cover, and Dold certainly pencilled a masterpiece for *Spoor*. Keep this latter artist right on the job.

I'd like to compliment Charles Fort on *Lo!* It's certainly holding our interest. July *Astounding Stories* was one of the best issues, on the whole, for some time. I just started reading science-fiction a few months ago. Purchasing four magazines I finally concluded that *Astounding Stories* had the best reading material and the finest illustrations.

And now for a few suggestions. Why not make the cover of stiffer quality, and cut the pages straighter? And, oh, yes, how about some more stories of what life will be like in the future?—Fred Messick, 922 Washington Ave., Woodbury, New Jersey.

A Faithful And Helpful Reader

Dear Editor:

I see a good many inquiries in *Brass Tacks* for back issues. I have all copies of the old *Astounding Stories* from the first copy (January, 1930) to September, 1932, inclusive. These are available for sale.

Astounding Stories has undergone a decided improvement under Street & Smith. The thought-variants have been exceptionally good, and all that have been printed yet have been just what the name states—thought-variant. Personally, I believe the best story, long or short, ever printed in *Astounding Stories* was *Rebirth*.

I have "done my bit" by interesting two new readers. Come on, folks! Give the editor a hand.

Personally, I would like to see a short biographic sketch of the authors, with a picture, if possible.—Harry E. Cowan, R. D. 1, Box 217, Du Bois, Penna.

Brickbat Target—Mr. Fearn

Dear Editor:

To me the most astounding thing about *Astounding Stories* is that you actually accept and publish such utter and unadulterated tripe as *The Brain Of Light*, and *Before Earth Came*, by John Fearn. In a magazine supposedly devoted to scientific fiction, Fearn's stuff is undoubtedly fiction, but even to suggest that it is scientific is an unforgivable libel on science. I am a graduate of an engineering college, and have always been told that any true science depends upon the greatest possible accuracy. Fearn's stories are composed of the most astounding collection of inaccuracies and vague statements it has ever been my misfortune to meet. I grant you that stories such as you publish require imagination, and that Fearn has a most fertile imagination, but that seems to be about the only equipment he has for writing any kind of stories.

I do not ask that your stories be probable, or even that they be possible, but I do think that they ought to be written so that at the time of reading they seem to be within the bounds of possibility. Fearn's stories are so filled with poorly worded statements of absolute impossibilities that I find it impossible to appreciate the flights of fancy at which he is so adept.

Here is a howey from *Before Earth Came*: "Inside this meter is an invisible recoiling wave-length." I grant that any wave-length is invisible, being nothing but a measure of distance, and having no substance whatever. For the same reason it is pure balderdash to speak of a "recoiling" wave-length. He might as well speak of a recoiling centimeter, or a recoiling inch, or mile, or foot, or any other unit of linear measure.

Speaking of "Miraum," Fearn produces this brain-wave: "Opaque and heavy to the eye, but transparent and magnetic to light-waves. It gathers the faintest possible radiations of light to itself for a distance of ten million miles and brings those light-waves to itself without the faintest trace of distortion or fading." Well! Well! Does Fearn not know that all that any lens does is to transmit light-waves? And does he not know that ten billion miles is but 0.0017 light-year, and that we now have telescopes that make pictures of stars hundreds of light-years distant?

If I buy any more copies of *Astounding Stories* it will be for Charles Fort's *Lo!*, which I find extremely interesting.

Let me say in conclusion that I have read a number of well and logically written stories in *Astounding Stories* such as *Ancestral Voices* and *Rebirth*, by Thomas Calvert McClary, of which, unfortunately, I read only the last half. If you will eliminate all such trash as Fearn writes, and get more stories like those two (and particularly *Rebirth*), you will have a worthwhile magazine.—William M. Dauner, 6843 Thomas Blvd., Pittsburgh, Pa.

Our Imagination Quails

Dear Editor:

It is with great pleasure that I note the "come-back" of *Astounding Stories*, and I am glad that I have not become a deserter. Ah, yes! I have been faithful. I kept on cheering even when it seemed to be fading out, and at last I have been rewarded, for good old *Astounding Stories* again has emerged at the top with flying colors and an outlook that promises to be superior to the "good old days."

I think the thought-variant stories a fine idea, and I hope all the authors keep up their good work in producing material which makes *Astounding Stories* a source of pleasure to all science-fiction fans, in spite of the damning words of pessimists who frown on the impossibilities of what they term as "imbecile drivel."

I have a friend across the ocean who curses

(his own words) all science-fiction stories. In a recent letter he poured out floods of complimentary phraseology against the authors of such "impossible," "senseless" stories which made my ears burn with indignation. Heh! heh! Imagine a nice "sensible" tale of the West or a cute little love story imbedded within the pages of *Astounding Stories*!—Miss E. M. Poppe, Box T27, West Brownsville, Penna.

Thank You, Mr. Zagat

Dear Editor:

So unusual is it for an author to be completely satisfied with the illustration appended to his yarn that I am impelled to write thanking you for selecting Elliot Doid to grace *Spoon Of The Bat* with his excellent drawing. Mr. Doid's draftsmanship is splendid, his meticulous attention to detail exceptional, but the most striking feature of his work is the evidence it displays that the artist has read the story he illustrates. I find that the picture breathes the mood of my own narrative, the delicate poise between familiar character and unfamiliar environment that is so difficult to achieve in words, and so almost impossible (to judge from other illustrations it has been my lot to draw in my not-limited experience with your and other publications) to attain in the artists' media.

My felicitations also on the excellent issue.—Arthur Leo Zagat, 1315 Merriam Ave., New York.

"A Mile"

Dear Editor:

Astounding Stories! The best magazine of its kind. The magazine so far as I am concerned. If (our) magazine continues to be as good as the last seven issues, I will be your reader for life. I say the last seven issues because that is when I started reading *Astounding Stories*.

I read two other science-fiction magazines, but *Astounding Stories* has them beat by a mile. And, what's more, *Astounding Stories* is certainly getting further in the lead.

There was only one story that I did not care for in the last seven issues, and that was *Rebirth*.

I welcome the addition of pages with open arms. To me the readers' corner, Brass Tacks, is an important part of the magazine.—Max Aschler, Corvallis, Oregon.

Correspondents Wanted

Dear Editor:

Although I have read only two issues of *Astounding Stories*, I assure you I am going to keep on taking the magazine.

Lo! is all any one could want in a department for information on superscience that has actually happened. I think Part Four was the most interesting. It is the only department of its kind I have ever seen. Brass Tacks is another good feature. The majority of the letters I have read in the department praise your magazine.

In the July issue, I have no favorite story. This is because I enjoyed them all so much I really can't give much preference to any of them. If brought right down to the subject, however, I might say that *Before Earth Came* has a very slight edge over the others. Let's have some more by Pearn, Zagat, Kruse, and Wandrel. They all write excellent stories. Your thought-variant idea is good.

About the drawing. I think the cover picture is better than the pictures heading the stories, but they're good, all the same. I agree

with Mr. Arthur Gnaedinger that Elliot Doid is the best interior artist.

Now, editor, if you have had the courage to read this far, might I ask a favor of you? Will you please enter somewhere in Brass Tacks the fact that I would like to correspond with other readers interested in science? I do a lot of experimenting with chemistry, electricity, and radio. Thanks a lot.—Francis Donovan, Pondville Hospital, Wrentham, Mass.

Thank You. You're Doing Excellently!

Dear Editor:

I have just received the July issue of *Astounding Stories*, and it looks good. I see from the editor's page that *Astounding Stories* is going to be enlarged by twenty-five thousand words. Remarkable!—and right after the editor's announcement of the unexpected arrival of the *Skyhawk*. Really, *Astounding Stories* is getting to be a real headache to its competitors. *Astounding Stories* only costs "a pair of ten-cent pieces" (to quote from Mr. Milton Kaletsky's interestingly written letter). Well, I'd be more than willing to give a hunk for a copy, and even then I'll know I'm getting more than my money's worth.

Here's a few things I'd like to see back again: *Strange Tales*, Dr. Bird, Hawk Carse, and John Hanson. They were all real features of the old *Astounding Stories*. We "old-timers" really miss them (at least the majority of us, anyway). Let's have a final answer—do we or don't we get them? If not, why not?

About these thought-variant stories—great stuff! I enjoyed *Rebirth* a lot.

I can't kick about the illustrations. Would like to see Weeso back, however. A lot of brickbats came his way, but the persons who flung them did so without any reason.

Charles Fort's *Lo!* is a marvelous piece of work. Mr. Fort deserves to be congratulated by all followers of science-fiction.

Incidentally, editor, I indeed three people to start reading *Astounding Stories*—all of the female sex. You asked for cooperation in promoting circulation—well, how am I doing?—Ted Lutwin, 172 Pavonia Ave., Jersey City, N. J.

"Nice, Long Thought-variants"

Dear Editor:

Your serial *Lo!* is really swell and I enjoy every installment. Please have only one serial novel; I have already stopped reading the other two science-fiction magazines because they have too many serials. Another thing: Why don't you put out a quarterly magazine of *Astounding*? You could have some nice, long thought-variant stories, and I'm sure it would go over big.—Seymour J. Sanders, 1006 Gerard Avenue, Bronx, New York City, New York.

Right—That's Our Aim

Dear Editor:

I am really very well pleased with your splendid magazine.

I first started reading it when I was eleven years old. I really read it more for the thrills it contained than for anything else. Now I am older and I enjoy this type of magazine not so much for the thrills contained therein as for the splendid type of fiction it publishes.

The best story you have published in the last six months is *The Legion Of Space*, by Williamson.

I believe that I understand your point of view in publishing the new *Astounding Stories*. You

want to make it entirely different from the rest of the magazines on the market, new illustrations, lower price, more pages, et cetera. All in all you want to give your readers a square deal, and you certainly are doing it.

Please give us a quarterly, and publish *Astounding Stories* twice a month, and I believe I can interest more than one new reader in this magazine.

Best luck for future issues.—James N. Mooney, 416 W. 118th St., New York City, New York.

More Fearn Wanted

Dear Editor:

Jack and I have been reading *Astounding Stories* for more than four years. Since Street & Smith took it over, there have been quite a few very good stories, such as *Colossus*, which was one of the best stories I have read in a long time.

We have formed a science club and *Astounding Stories* is one of the magazines which each month we do not fail to get.

I am glad to hear that you are going to print the *Skylerk*.

How about more stories by Mr. John Russell Fearn?—Ira M. Schey, Jr., 154 Broadway Avenue, New Rochelle, N. Y.

Then We Don't Have To Worry!

Dear Editor:

If you can furnish us with stories one half as good as *Rebirth* and *Succubus*, you won't have to worry about adding new readers to your already large list.

That idea of destroying civilization and then restoring it in more perfect order was original as far as I can see.

Charles Fort's *Lo!* is quite an interesting feature. I can readily see why authors use his book for ideas.

Keep your editorial page and if possible take two pages in handing us advance information on future contents of *Astounding Stories*.—Michael Racano, 51 Brookwood St., East Orange, N. J.

A Forum For Theories

Dear Editor:

This is my first letter, although I am an ardent science-fiction fan.

In your July issue, *Spoor Of The Bat* was really fine. I enjoy this type of story.

Charles Fort's *Lo!* is very interesting. Why not open a forum in connection with *Lo!* in which readers may express theories concerning it? I have no such theories of my own, but am sure others have that would make interesting reading.

The Legion Of Space is getting better all the time. Orchids to Jack Williamson for his continued fine work.

Don't you think the illustration heading *Brass Tacks* is rather ancient? How about something modern?

I rate the July issue as follows:

- | | |
|-------------------------------|------------|
| 1. <i>Legion Of Space</i> | fine |
| 2. <i>Spoor Of The Bat</i> | fine |
| 3. <i>Before Earth Came</i> | good ½ |
| 4. <i>The Nerveless Man</i> | good |
| 5. <i>The Electric Snare</i> | fair |
| 6. <i>The Radio Mind-Ray</i> | fair |
| 7. <i>Guns Of Eternal Day</i> | fair |
| 8. <i>Dr. Lu-Mie</i> | not so hot |

—David J. Brown, 15 S. Veitch Ave., Ballston, Virginia.

Even Modesty Couldn't Prevent Our Publishing This!

To My Fellow Readers:

If the editor doesn't let his modesty prevent him from printing this little effusion, I'm going to broadcast to all the enlightened men and women who read "our" big magazine that, in the opinion of this humble scribe, we are getting the biggest break ever offered the readers of any magazine, let alone those in the field of science-fiction.

Surely no editor ever before made so many beneficial changes in one short period as have been made in *Astounding Stories*. More pages, better covers, incomparably better and more varied stories (the "thought-variants" for instance), new authors, more pages devoted to readers' letters than any two competitors, a lower price than any comparable magazine, and best of all, the latest and greatest *Skylerk* story! If that isn't an overwhelming improvement, then figures have taken to imitating Baron Munchausen. As good old "Skylerk" Seaton would say: "I check you to eighteen decimals, Ace."

Not only have all the things mentioned above been actually incorporated into the regular make-up of the magazine, but if we give our wholehearted support there is a good chance of effecting even greater improvement. Our editor assures us that if the demand becomes great enough, *Astounding Stories* will become a bi-monthly, and if that isn't an improvement, I miss my guess a couple of light-years.

Who knows? Perhaps with enough readers and with their support solidly in back of the idea, we shall at last achieve that goal of all science-fiction fans, a real, dyed-in-the-wool, blown-in-the-bottle science-fiction movie, taken right from the *Skylerk*, or some other meritorious story!

I can't occupy too much space, or I'd do more than merely mention the objectionable features which have been entirely eliminated, such as dry-as-dust reprints of stories which appeared ten years ago in book form and yarns so much alike you can't tell one from the other, except for the fact that one heroine has blue and another brown eyes. I will take time to add, however, that in fifteen years of more or less continuous reading of science-fiction, I've never seen a more startling and welcome change in a magazine than *Astounding Stories* has made.

Now then, even the most skeptical of us must admit the truth of the above facts, so I think it is up to us readers to get solidly back of our magazine and push for all we're worth. After all, it doesn't cost anything to introduce a new reader to *Astounding Stories*, just a little persuasion to try it once, and the good old magazine will do the rest. Let's all try and win over one more reader, and show the publishers and the editor that the "New Deal" in magazines is appreciated and justified.

How about it, gang, what do you say?—L. J. Stanton, RM3C, Box 10, "D" Division, U. S. S. Colorado, New York, N. Y.

Back Copies For Sale

Dear Editor:

I have in my possession a number of old *Astounding Stories*, scattered over a period of time dating from 1930 to 1933, inclusive. I am offering these for sale to any other readers. With one exception, however, they all have covers and are in good condition. The one exception, however, is perfectly readable, but has been disastrously exposed to the weather. Any one interested can write me for full particulars as to dates, et cetera. I am asking ten cents for one copy. That's fair enough, isn't it?

I hope, Mr. Editor, that you don't think I'm disposing of these magazines for lack of interest in *Astounding Stories*. Your present publication is positively the best science magazine on

the market and I will always read it.—Arthur Gnaedinger, 116 Clinton St., Brooklyn, N. Y.

More Long Stories Wanted

Dear Editor:

I have been an ardent reader of Astounding Stories for quite a spell, but this is my first letter to Brass Tacks, and I trust you will see fit to publish it. I always read Brass Tacks, but like most people I kept putting off writing to you to praise your good magazine.

Sidewalk In Time I enjoyed very much, but why can't we have only about three long complete stories every month and one serial instead of the usual bunch of short stories? The stories now published are too short, as when one is just getting interested in a story it ends. I am sure all your readers would prefer three long stories and one serial to the six and seven short ones you now print. Whoa!—don't take me wrong. I'm not knocking good old Astounding Stories, but you know the old saying, "Everybody to their own taste."

I believe this is enough for my first writing as I don't want to hog up all your space.

I would also like to have some pen pals from all over the world if anybody cares to write me.—Howard W. Nelson, 2002 W. 21st Place, Chicago, Ill.

No End!

Dear Editor:

Just finished reading the thought-variant for July and I want to say that it is the author's best effort to date and that's saying plenty, for he's written some fine stories.

Is there no end to the surprises that the editor has in store for the readers? Any reader that doesn't get a new reader for Astounding now isn't very much interested in the magazine. If you ask me. Come on, all you red-blooded fans and get a new reader and let's have the magazine twice monthly.

I don't think any one could read our magazine now and not come to the conclusion that it's the best science-fiction publication on the market.—Oion F. Wiggins, 2418 Stout St., Denver, Colorado.

When, Oh When?

Dear Editor:

The July issue of our magazine is the best yet. The cover is simply marvelous.

Before Earth Came is the best story you have published so far. It was certainly a thought-variant.

I noted with pleasure increase in size and the enlargement of Brass Tacks.

When do we get our quarterly?—Mervyn Evans, 1937 Downing St., Denver, Colorado.

"Pip"

Dear Editor:

This is my first Brass Tack, and I have a reasonable hope it will be published.

Just finished the July issue, and I think it is a pip. Here are the stories, the ones I liked best being first.

1. *Before Earth Came*—a true thought-variant.
2. *Spoor Of The Bat*—a good action story, but with a too-conventional ending.

3. *Dr. Lu-Mie*

4. *The Radio Mind-Ray*

5. *The Nervous Man*—Rather below Mr. Wandrel's standard.

6. *Guns Of Eternal Day*

The Legion Of Space gets better every time, if such a thing is possible.

Don't let H. V. Brown and E. Dold get away. They certainly know their stuff!

Would like to correspond with any one interested in science-fiction and promise to answer all letters.—Arthur L. Widner, Jr., 79 Germaine Avenue, Quincy, Mass.

We'll Get There

Dear Editor:

Just a few lines to let you know of my feelings toward your magazine. It is the absolute peer of science-fiction magazines and is getting better every month. Please do not publish over one serial at a time in the magazine.

Keep up the good work—two Astonndings a month!—Ben Dick, 1180 E. 42nd Place, Chicago, Ill.

"Shorts Very Poor"

Dear Editor:

This is my first letter to Astonnding Stories although I have been reading it for some time. You have improved the magazine 100%. However, I have a few brickbats to throw.

First, your short stories are poor, very poor. Second, the illustrations are bad. The only good artist you have is Elliot Dold. Brown is strong on covers, but his other illustrations are enough to give you a nightmare. Third and last, why not have smooth edges on the pages and thicker covers that do not overlap the pages?

In this, the July issue, the best story is *Before Earth Came*, with *Spoor Of The Bat* a close second. *The Legion Of Space* is very good.—James F. Davis, Bellevue Hospital, New York City, N. Y.

You Don't Have To Be Careful!

Dear Editor:

This being my first letter to your esteemed publication, I will be careful of my brickbats. I started reading Astounding Stories when nine years of age. I am now nearing twelve and am still a faithful reader. Get Wesso back. Also revive the Hawk Carae series.

If anybody wants to communicate, I promise to reply.—Steve Reckert, 1139 So. 6th St., Terre Haute, Ind.

Back Copies Wanted

Dear Editor:

Have you got in stock Astonnding Stories for July and August of 1932? If not, perhaps a reader would be willing to dispose of his.—Robert Gallaher, Jr., R. 1, Box 203, Excelsior, Minn.

Our Heads Are Safe

Dear Editor:

Attention Mr. Cahendon and Mr. Sanford, who harassed their tacks in the July issue!

For the sake of our poor unblasted atoms, don't mention Poe or Verne to the editors of Astounding. They might get it in their heads to reprint some of the works of the aforementioned gentlemen, and that would be disastrous! It's all one can do now to bear up under the barrage of those old "science-fiction classics"

that another magazine is forcing upon us poor readers!

Take a tip, editor: If you reprint anything, don't reprint a story that school children have been reading for years.

The July cover was a nifty. Brown is O. K. His work is as good as other illustrators.—Bob Tucker, P. O. Box 260, Bloomington, Ill.

An Answer

Dear Editor:

The announcement on the editor's page is good news. I hope you add a novelette instead of shorts. By changing to a smaller type, you will be adding as much wordage as though you had added 50 or 60 pages. Am I right? I hope that the reading matter is spread over a greater area of the page so as not to waste so much space on margin as is done now. Here's hoping you will also use better-looking lettering for the titles of the stories.

And now to answer Mr. Lewis of La Roche, South Dakota. Mr. Marchioni has his faults; his drawings are sometimes too stilted in appearance. But he has one thing necessary to all science-fiction artists, and that is imagination. He can draw complicated-looking machines, strange creatures from other worlds, et cetera. All artists can't do this. I know. I've seen them try. Dold, however, has exceeded Marchioni. Let's have more drawings per story. Let Brown specialize on cover work.

The stories in the July issue were indeed worth publishing in Astounding. All of them were good, especially *Before Earth Came*, *Spoor Of The Bat*, and *The Legion Of Space*. The latest part of *Lo!* is the best yet.—Jack Darrow, 4224 N. Sawyer Ave., Chicago, Illinois.

How About It?

Dear Editor:

You've done it! I thought the June issue was unbeatable, but the July issue is twice as good. Of the stories I've read, I liked them in the following order: *Before Earth Came*, by John Russell Fearn, *Spoor Of The Bat*, by A. L. Zandt (this was very realistic), *The Nerveless Man*, by Donald Wandrei.

What a cover! The artist knows how to blend colors. In Brown you have the best artist; hold onto him. The same applies to Dold.

Watch for my opinion on the August issue. I'm wondering how it can be much better than the current one.—William H. Kennedy, R. F. D., Salem, N. H.

A New Reader

Dear Editor:

Many a Japanese girl give some of her opinions to Brass Tacks? Or are the girls forbidden to write in their opinion? I wasn't sure because I did not see any letters from the girls. I want to write you because I have really enjoyed your wonderful magazine. It is indeed a great pleasure to read something unusual.

I first came upon your magazine at home. My brother gets it often. I wanted to see what kind of magazine it was for I never read it before. I soon found out. I congratulate you for publishing such a magazine for scientific-minded people.

If there is anybody who would like to correspond with me I will be very glad to do so.—Lynette Hamakami, Route 1, Box 53, Auburn, Washington.

Any For Sale?

Dear Editor:

Could you tell me where I could get the complete story of *Skylark III*? Perhaps one of your readers has copies he would be willing to sell.—R. E. Hubbard, 916 Park Ave., Albany, N. Y.

Before Earth Came The Best

Dear Editor:

To begin with, let me state that I have a collection of over 350 magazines of weird and science-fiction, also quite a few duplicates, and numerous short stories and novels taken from magazines that publish this type of story only on rare occasions. Having read these several thousand stories I should be able to know a good science-fiction story when I meet up with one. And I unhesitatingly choose *Before Earth Came* as one of the best science-fiction stories I have ever read. It is by far the best story so far published by the present publishers of Astounding Stories, and I'm not at all sure but what it is the best one ever published in any issue of Astounding Stories. Stupendous is the best word I can think of to describe it.

Spoor Of The Bat was a very good story, and so was *Dr. Lu-Mie*. The latter story is by far the most astounding termite story I have ever read. *The Nerveless Man* was also good.

Jack Williamson certainly is disappointing me lately with such trips as *The Legion Of Space* and worse yet *Born Of The Sun*. For a time he was second only to Merritt in my estimation, but he certainly has taken a tumble recently.

Your thought-variants have been good except for *Born Of The Sun* and *Sidewheel In Time*. These two were terrible.

Couldn't you by fair means or foul contrive to start up *Strange Tales*?

I noticed that several letters in the July issue were from readers who have not read some of the old issues of the science-fiction magazines and would like to get hold of some of them. As I stated in the first part of my letter, I have several duplicates which I will sell for a reasonable price, and as I have quite an extensive correspondence, I could probably get most any issue that they happen to want. So if any one wishes to get some certain issues to round out his set I will be glad to supply him with the ones he wants for very reasonable prices.

I really don't see how you can keep on increasing the size and quality of Astounding Stories and keep the price the same. I have quit reading the other two science-fiction magazines, but you can rest assured that I'll stay with Astounding Stories.—Lionel Dilbeck, 1834 Gold St., Wichita, Kansas.

He Is Not Alive

Dear Editor:

I have been a reader of your fine magazine for several years and I congratulate you for publishing the "thought-variant" tales and *Lo!* by Charles Fort.

I am writing for a little information. Would you kindly let me know if Charles Fort is still living? A recent letter in Brass Tacks seems to indicate that he isn't.—V. H. Gaddis, Box 74, Olivet, Ill.

Another Request

Dear Editor:

Would some reader be willing to sell me the magazines containing the previous *Skylark*

stories? They are the best I have ever read.—
Mr. Lavender, 176 West Central Ave., Delaware,
Ohio.

Not Absolute Freedom

Dear Editor:

According to my views, Astounding Stories is now leading the science-fiction magazine world. I find it harder to wait for your magazine than any other.

Spoor Of The Bat. Every time we want good adventure and some restful dry humor, turn to Arthur L. Zagat. Mr. Zagat, you certainly command your pen.

The Legion Of Space, naturally by Jack Williamson, is the most entrancing story I've read for a long time. It's going to be a favorite of all the fans, I know.

Your thought-variant *Before Earth Came* was O. K. John Russell Fearn knew his onions. Even that scar on the arm was based on fact. Marks (birthmarks, so called), deformities, and baldness are carried from generation to generation, through centuries.

Frank Kelly states a fact in his letter to Brass Tacks. I guess that's why Astounding Stories is the leader.

I noticed a letter by Robert Lowndes headed as "Absolute Freedom of Thought." He states that science-fiction is the one field where there should be that freedom. I believe he has slightly misunderstood it. Weird fiction is the place for absolute freedom. Science-fiction must have some, but not all or it would degenerate into weird fiction.

J. Altham of San Berdoos shouldn't have used the words "ill-founded logic" in describing *Lo!* That is slamming something which is fact!

I don't kick against rough edges, small size, or covers. The stories and illustrations take up all my interest and criticism. Doid is the best interior artist I've seen. Keep him.

Where did you get the story *The Radio Mind-Ray*? It must have slipped by with an invisible screen. Mr. Coblenz, I don't understand your writing that! Make your next one better.

Did you all read the first and third letters in *July Brass Tacks*? I'll split them for my opinion. Jack Winks states my ideas, and Mr. Kaletsky my feelings in his first paragraph.—Thos. R. Daniel, 232 Olive St., Claremont, Calif.

Back Copies Wanted

Dear Editor:

I want to congratulate you on your great improvement of the old Astounding Stories. I have just finished the July issue and can truthfully say that it is the best issue by far under the Street & Smith banner.

I am in favor of a quarterly and Astounding Stories coming out twice a month. If you keep up the good stories. At least how about a quarterly? I would like to secure copies of Astounding Stories for the year of 1930 and any reader having these for sale in good condition please write me. One more suggestion: please get Anthony Gilmore to write some more Hawk Carse stories, as I am sure the readers will appreciate reading some more of them.—Truman Tyler, 3036 3rd Ave., S, Minneapolis, Minnesota.

And Again!

Dear Editor:

I am interested in purchasing the magazines containing the previous *Skylark* stories. Can some reader help me?—Albert Pyret, 141 Belmont Ave., Garfield, New Jersey.

Deteriorated!

Dear Editor:

Having read Astounding Stories for four years now—of course I had to revert to poorer quality science-fiction during its absence from the stands—I hope to be a Brass Tacker.

Away, Beefers! Why waste time and paper quibbling over the quality of the paper when it's the quality of the stories that counts? If you got your magazine printed on linen it would cost about fifty cents. Who cares about the illustrations except authorities such as Mr. La Roche; why vituperate about the deficiencies of a story or a picture? As long as I have been reading Astounding Stories I have never seen a poor job—of course we can't always get a *Colossus* or a *Before Earth Came*. Why try to make a magazine 100% perfect? The crabbers hardly know what to crab about now. Of course I venerate the perception of a person who can find something wrong with a story selected by ye editor.

Nothing against (Ahem) Mariella or Darrow, of course, but I'd like to know how they get a monopoly on this section. In fact, to show that there is no animosity in my make up, I would like to correspond with them or any other reader of this illustrious magazine, male or otherwise.

There is only one section that I think has deteriorated. Pardon, but Brass Tacks. Remember the old readers' column and the humorous remarks intersprinkled and affixed after the contribution by the editor? Ah me! My heart longs for them good old days!—Millard A. Troxell, 1107-10th St., Hawarden, Iowa.

Colossus Again!

Dear Editor:

I am ordinarily not given over to entering controversies which do not include me from the start, but this discussion about *Colossus* has become too interesting and besides it has development over a front including several people.

Not that I didn't enjoy reading *Colossus* or anything of the sort, but I think that it has to be admitted that there was an error which was a little too large to let slip by unnoticed without calling Mr. Wandrei to task. Mr. Wandrei put his foot into it when he mentioned the name of Dr. Einstein. This eliminated all possibility of this peculiar expansion theory being established as one created by himself, but as the one created by Dr. Einstein, which is most certainly not the right one. If you once link up such a theory in the story as one created by such an important individual as Dr. Einstein, there is nothing to do but follow it out in its last detail instead of substituting a fantastic one in order to make a story possible. If it wasn't for this, Mr. Wandrei, you could have said your theory was your own and the readers could take or leave it.

It is true that an increase in velocity brings about an increase in inertial mass which is relative to the observer and mode of observation; until, when the velocity of light is reached, this value becomes infinite. Every reader knows how much force it takes to move an infinite mass, yet several authors are continually creating space ships which travel at the speed of light or greater than this and still undergo the effects expected from the Lorentz-Eitzgerald theory. In other words they take parts of a certain theory which make a good story in which incredible things can be done and throw out the rest of the theory which puts the restraint on the whole affair. If such a thing keeps up in the science-fiction world, I guess I'll start taking some parts of theories which make good copy and clean up. Under such circumstances, anything can become possible.

The authors who cannot abide enough by scientific knowledge, but must be continually inventing theories which they just state and give no reason for their existence, are not much good or else they could present an excellent story

with the material on hand, so to speak. The really good science-fiction author should be scientific, because then he can develop plausible theories which are possible in the light of present-day science. No science-fiction story can be truly great unless these requirements have been fulfilled. Some stories have been acclaimed, due to the author's skill in writing, but under the microscopic eye of the scientist, they pass as very mediocre. Maybe this is hard to take by several science-fiction (?) writers who have broken into print by passing under the surveillance of some careless editor and have gained a following of nondescript fans whose knowledge of science is on a par with that of uncivilized savages. These same readers are continually pestering the editors with admonitions of what will happen if too much science is allowed to creep into a science-fiction magazine, while the really intelligent reader who appreciates the ingenuity of an author in weaving science into a story has to sit back and listen or be slammed.

Astounding Stories is certainly rising and the coming of the *Skyarks* to its pages proves that it is willing to reach out and get the best. You certainly are improving.—Edward F. Gervais, 512 So. Pennsylvania Ave., Lansing, Michigan.

Mental Exercise Needed

Dear Editor:

Opinion anent the late Charles Fort and his *Lo!* seems to be divided, but one thing is certain—that the bizarre occurrences reported to him are not manifestations of any superscience, as stated by the editors of *Astounding Stories*.

What is science, anyway? Merely the orderly arrangement of observed facts, of all knowledge, classified under the laws, theories and hypotheses developed to bind together this knowledge and to explain it.

The instances of teleportation, blood running from objects, etc., are at present nothing but facts of nature as yet unexplained by any plausible theory or other fact. When a satisfactory theory will be advanced and accepted, or when the causative agent will be discovered, these unusual occurrences will no longer be isolated events but will all become part of our scientific (that is, classified and explained) knowledge.

I do not deny the truth of Mr. Fort's statements. Here is a case in point: the *London Illustrated News* recently reported the case of Anna Monaro of Piarone, Italy, whose chest occasionally becomes luminous while she sleeps. And I partly agree with him in his dissatisfaction with the conventional explanations of these strange events offered by investigators. But I entirely disagree with his interpretation of these happenings which are nothing but unexplained natural phenomena.

But it was a good idea to publish this book, for by showing up some of the weaknesses of present-day science it may aid the eradication of these weaknesses.

The thought-variant stories are generally good, but too often vary our thoughts from right to wrong.

Wandrei, in *Blinding Shadows*, states that a three-dimensional object throws a two-dimensional shadow. This is wrong. The shadow of a body is always three-dimensional, being the region of space from which light is cut off by the body. What we commonly call the shadow is merely the interception of the shadow by another body. Hasn't Mr. Wandrei ever seen diagrams of an eclipse wherein a black space extends from moon to earth?

This letter contains chiefly knocks because I think you need some to counteract the vast amount of praise you've received (and deservedly so). Since you are increasing the size of this department, I ask you to print this rather lengthy epistle. It may stir up some discussion and I need some mental exercise.—Milton Kaletsky, 1821 University Ave., New York, N. Y.

"All It Lacks—"

Dear Editor:

The July is the best issue to date; but I doubt if it will be supreme for long, with Smith's *Skyark* coming next month. Especially did I enjoy *The Nervous Man*, Wandrei's greatest short story; the author seemed to know what he was writing about. Arthur Leo Zagat wrote a tale of remarkable power when he created *Spoor Of The Bat*; how about more stories featuring Lathrop Gresham of the Terrestrial Secret Service? *The Legion Of Space* continues giving us the gripping action and hair-raising thrills that are to be expected from Williamson. Charles Fort tells some astounding facts in this installment of *Lo! Dr. Lu-Mie and The Electric Mind-Ray* rounded out an interesting, gripping issue.

All that A. S. lacks to become the perfect science-fiction magazine is smooth, slick paper and the following authors: A. Merritt, H. P. Lovecraft, Robert E. Howard, and Clark Ashton Smith. Their addition to your staff would leave nothing to be desired in the way of writing.

I hereby add my voice to those asking for the resumed publication of *Strange Tales*, *Astounding Stories'* former twin and companion magazine in publishing fantastic literature. We have A. S. with science-fiction; now let's have S. T. with weird fiction. Issue S. T. at the first of the month, and A. S. in the middle; that would give the fans of the occult a magazine of their own, and would end forever the argument concerning the printing of supernatural tales in A. S.—Alvin Earl Perry, Box 265, Rockdale, Texas.

A Cheer For Williamson

Dear Editor:

Jack Williamson remains the supreme science-fiction writer, outranking R. E. Smith, Nat Schachner, Diffin and H. Vincent. There's something about a Williamson tale! Paul Erast pens a neat narration likewise. You're putting out a nice magazine.—Tom Olog, San Bernardino, California.

Bouquet

Dear Editor:

Compliments and bouquets are in order for the editor of the greatest and the best science-fiction magazine in the world. It is a magazine really enjoyable from the viewpoint of both science and fiction. That comes from my heart, for it is very seldom indeed that I am stirred so much by a magazine that I am forced to write to them to let them know just how I feel. It is gratifying for science-fiction fans to know that there is at least one editor who is devoting his entire time and energy to the building up of such a magazine as *Astounding Stories*.

Your announcement of E. E. Smith's *The Skyark Of Valeron* was a great surprise. I have never read his previous *Skyark* stories, but if they are as good as his later stories they are certainly to be looked forward to. He heads the list of my favorite authors, a few of the others being Jack Williamson, David Keller, John Campbell, John Fearn, and Charles Diffin.

And another thing: I don't quite get the drift of *Lo!* which is running in the magazine. There is undoubtedly a great amount of scientific fact in it, but it is written so queerly that it is very difficult to peruse.—W. C. Barnes, 732 S. 1st Ave., Sioux Falls, So. Dak.

Concentrated Comment

Dear Editor:

Long letters are sometimes tiresome, so here goes something: A list of bests:

AND TO THINK THEY USED TO CALL ME SKINNY



SKINNY? NEW EASY WAY ADDS POUNDS

—so fast you're amazed

Astonishing gains with new double tonic. Richest imported ale yeast now concentrated 7 times, iron added. Gives 5 to 15 lbs. in a few weeks

NOW there's no need to have people calling you "skinny", and losing all your chances of making friends. Here's a new easy treatment that is giving thousands solid attractive flesh and husky strength—in just a few weeks!

You know doctors for years have prescribed yeast to build up health. But now with this new discovery you can get far greater tonic results than with ordinary yeast—regain health, and also put on pounds of firm, handsome flesh—and in a far shorter time.

Not only are thousands quickly gaining good-looking pounds, but also clear skin, new pep.

Concentrated 7 times

This amazing new product, Ironized Yeast, is made from specially cultured brewers' ale yeast imported from Europe—the richest yeast known—which by a new process is concentrated 7 times—made 7 times more powerful.

But that is not all! This super-rich yeast is then ironized with 3 kinds of strengthening iron.

Day after day, as you take Ironized Yeast, watch flat chest develop, skinny limbs get husky, skin clear—you're a new person.

Results guaranteed

No matter how skinny and weak you may be, this marvelous new Ironized Yeast should build you up in a few short weeks as it has thousands. If not delighted with the results of the very first package, money back instantly.

Special FREE offer!

To start you building up your health right away, we make this FREE offer. Purchase a package of Ironized Yeast at once, cut out the seal on the box and mail it to us with a clipping of this paragraph. We will send you a fascinating new book on health, "New Facts About Your Body", by an authority. Remember, results are guaranteed with the very first package—or money refunded. At all good druggists. Ironized Yeast Co., Inc., Dept. 508. Atlanta, Ga.

*Posed by
professional
models*



"I THANK YOU—
I thank you ever so much—but I couldn't
even think about smoking a cigarette."

"WELL, I UNDERSTAND,
but they are so mild and taste so good
that I thought you might not mind trying
one while we are riding along out here."



Best story, *The Legion Of Space*;
 Best portrayed character, Giles Habihula;
 Best author, Jack Williamson;
 Best magazine, Astounding Stories.
 Things of merit you have done:
 Shattered the gates limiting an author's
 imagination;
 Given us the term "thought-variant!";
 Secured a *Skylark* story;
 Given us extra words;
 Refused reprints.

Things not to your credit:
 Six-part serials;
 Printing of *The Brain Of Light*.
 (Too bad; nothing more under this heading.)
 Things you should do in the future:
 Issue a full-sized quarterly with book-length
 novel;

Issue a sister magazine (not *Strange Tales*);
 Become a semi-monthly;
 Have two serials of four parts each;
 Retain Williamson (*The Legion Of Space*);
 Retain Schachner (*Ancestral Voices*);
 Retain Zagat (*Spoor Of The Bat*);
 Retain Leinster (*Sidewise In Time*);
 Retain Wandrei (*Parvelli To Earth*);
 Retain Fearn (*Before Earth Came*);
 Retain Coblenz (*The Radio Mind-Ray*);
 Retain Bates (*A Matter Of Size*);
 Secure Dr. Keller;
 Secure Burroughs.

Things you shouldn't do in the future:
 Have an editorial (except your present
 peppy talk);

Run any more six-part serials (four's
 enough).

Stories in order of merit (July issue):
The Legion Of Space, by Jack Williamson;
Before Earth Came, by John Russell Fearn;
Spoor Of The Bat, by Arthur Leo Zagat;
The Radio Mind-Ray, by Stanton A.
 Coblenz;

The Nerveless Man, by Donald Wandrei;
Guns Of Eternal Day, by Howard Graham,
 Ph. D.;

The Electric Snare, by David O. Woodbury;
Dr. Lu-mie, by Clifton B. Kruse.

Of course, I can't classify *Lo!* because it's
 in a class by itself; in this issue, the facts he
 gives are not so startling as before, but the
 feature is nevertheless superb.

A final word: of all the magazines I know,
 yours is the only one being honest with its
 public: no uncalled-for insincerity; no unfulfilled
 promises. It is really a marvelous thing the way
 you have steadily risen in excellence over each
 previous issue.—Paul Cahendon, 322 W. 4th St.,
 Cincinnati, Ohio.

"Cut Out—"

Dear Editor:

I have been reading your magazine for several
 years and like it better all the time. I am with

Wm. C. Reid of Buffalo, N. Y., in saying "cut out
 the serials!" and plenty of it. Put in more
 shorts.

Aside from that one complaint, I'm with you
 all the way and then some. Your magazine, or
 rather ours, is swell! I like stories similar to
He Never Slept, *The Thing In The Pond*, *The
 Emperor's Heart*, and *Rez*.—Glen E. Shepherd,
 Jr., 2401 Washington Boulevard, Kansas City,
 Kansas.

Yes—Still Talking!

Dear Editor:

I see people are still talking about *Colossus*.
 Well, it was worth it, as I said in a former
 letter. It was a story to make one think, and
 personally, I believe its science was O. K. It
 may have gone against certain theories, but then,
 there are plenty of opposing theories to be found
 in science when one gets away from concrete
 everyday things. *Colossus* was a thought-variant
 story and therefore was supposed to set forth
 startling ideas, which it did.

As for Astounding Stories—it's coming along
 fine. Bigger and better. Keep it up. And Mr.
 Editor, let me cast my vote against making a
 semi-monthly out of it. That would be too much
 of a good thing, I think. But put out a good fat
 quarterly by all means, and stack it full of nice
 long, but complete, stories.

Before Earth Came was fine, and so was *Spoor
 Of The Bat*. Let's see more like that latter
 story. Lately the science-fiction magazines seem
 to be getting away from the wild and woolly
 tales of space mix-ups which used to be so popular.
 In some ways that may be a good idea, but
 nevertheless an occasional fast-moving and excit-
 ing story is readily acceptable—much better to
 my notion than measly things like the half
 articles that Coblenz is feeding us lately. His
 philosophy is fine, but I'd rather have it in
 stories like *After 15,000 Years*.

And that reminds me. Since *Colossus* we
 haven't had anything so good from Wandrei.
The Man Who Never Lived was all right for its
 kind, but as I've mentioned before, I like my
 science-fiction with more body and length.

As for reprints, suit yourself. Remember,
 though, if you do print them, give us Merritt or
 Cummings or some of those. Don't dig up poor
 Jules Verne or Poe from the grave. They are too
 dry for these days.

Readers who want hack numbers, lend an ear.
 I have most of the old Astounding Stories and
 twice that many and more of the other science-
 fiction magazines, including some of the stories
 that certain of your readers call classics—the
Skylark stories for instance, and others by Keller,
 Coblenz, Cummings, Burroughs and a lot more
 of the old stand-bys. Anyone wanting to chisel
 me out of them or otherwise relieve me of the
 burden of their weight can write—D. R. Daniels,
 Con. Ute Agency, Ignacio, Colorado.

Enlarged once more through the use of a smaller type, *Brass Tacks*
 offers space for the expression of every reader's opinion. It in-
 vites comment and criticism, and is unrestricted and free-for-all.